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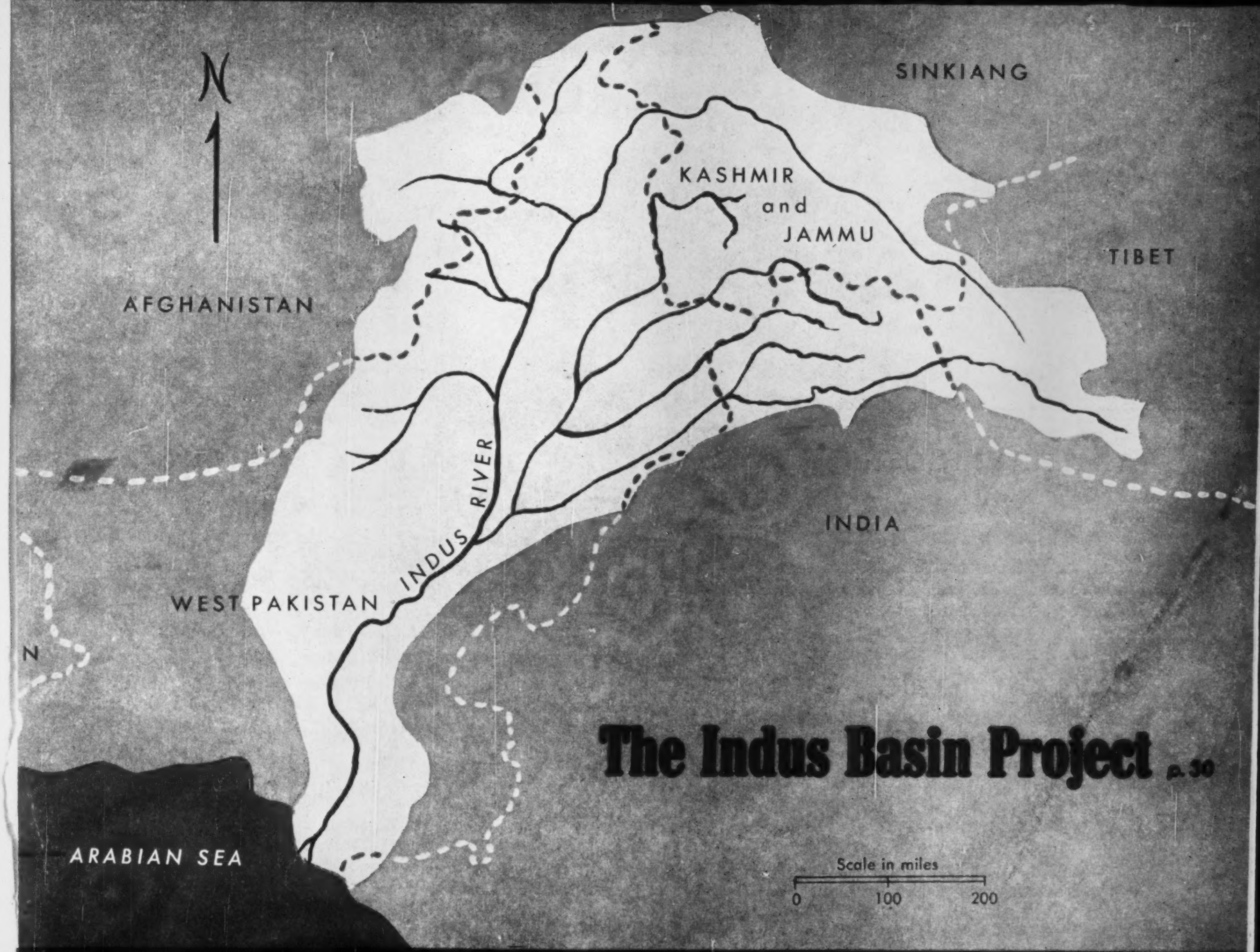
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The Indus Basin Project p. 30

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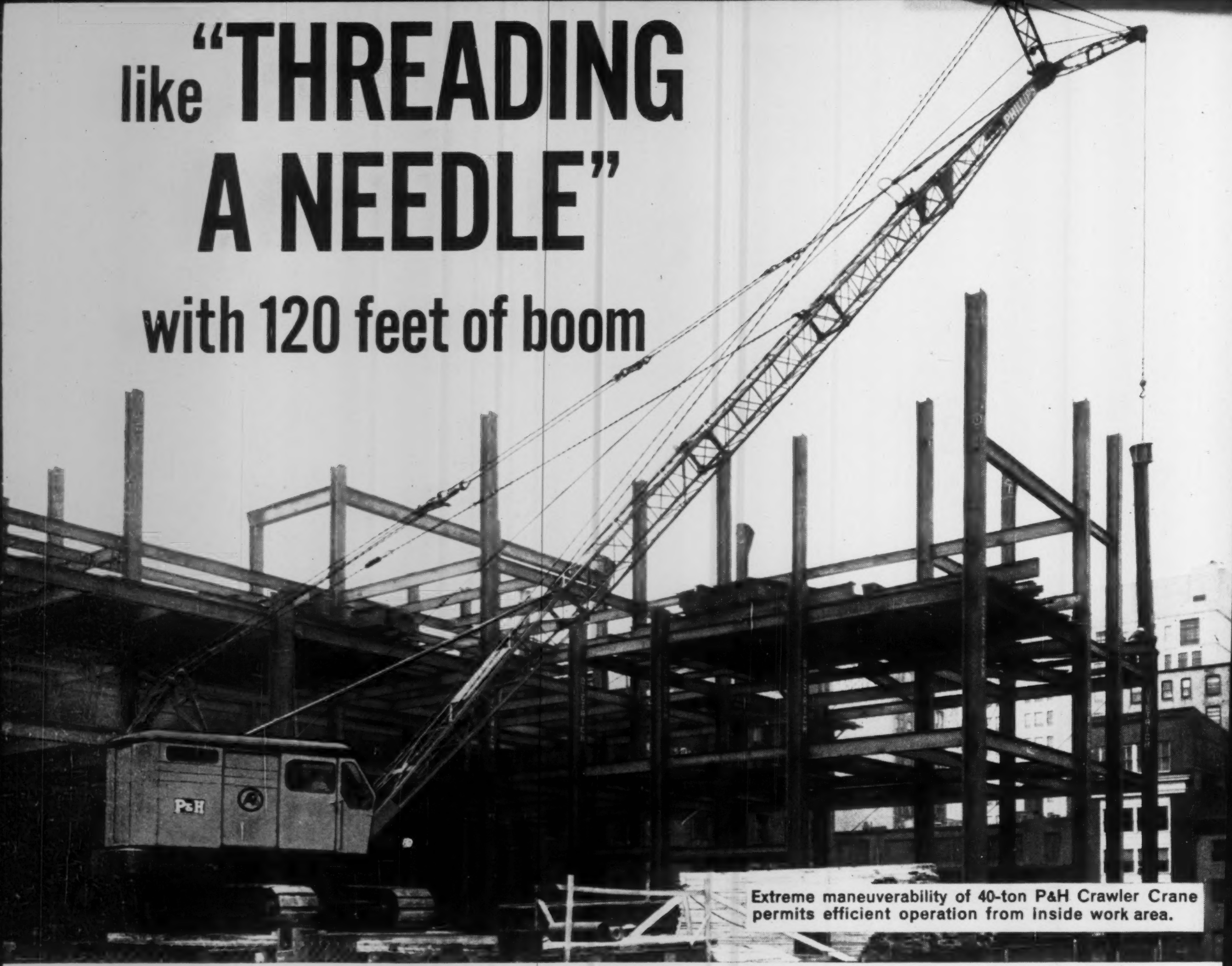
like "THREADING A NEEDLE" with 120 feet of boom



Extreme maneuverability of 40-ton P&H Crawler Crane permits efficient operation from inside work area.

ARTHUR PHILLIPS & CO. USES 40-TON P&H CRAWLER CRANE

to spot steel girders for precision joining system

Arthur Phillips and Company, steel erection contractors on the 21-story Mercy Hospital in downtown Baltimore, selected a 40-ton P&H Crawler Crane to handle the precision spotting of heavy steel girders in an unusual type of construction.

In this structural system, the precision "Saxe" clip was used for holding the steel girders for welding—demanding a crane with *outstanding control and exceptional steadiness and stability.*

This contractor found that their P&H combined the "precision control" and "rock-like steadiness" they needed to give them extreme accuracy in positioning the steel beams. It had enough capacity at long radius to make the required lifts, yet it was light enough to operate on the building—essential because heavy downtown traffic necessitated keeping the crane off the street.

Immediate, Positive Response to the slightest lever or pedal movement was provided by smooth hydraulic controls . . . extremely important in positioning of the Saxe clips where "minute" movement was necessary.

Positive Control of the Load—with power raising and lowering of the boom independently of other work motions—permitted the operator to hoist the load while raising or lowering the boom.

Steadiness and Stability under maximum loads enabled Arthur Phillips and Company to make 7-ton lifts at far-out reaches. It was done accurately and precisely with no waste time juggling for position.

For complete information on this job, write for Case History 103 or contact your P&H dealer for detailed facts on the complete line of P&H power cranes and shovels.

HARNISCHFEGER
Milwaukee 46, Wisconsin

P&H
CONSTRUCTION & MINING DIVISION

12 ALLIS-CHALMERS

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Big-loader performance on tight budgets

The low-cost TL-12 with TRACTOMATIC transmission automatically gives you 30 percent faster speeds in reverse. One lever on the steering column controls forward and reverse. The "12's" 8-ft, 4-in. dumping height and 32½ in. of effective reach keep *more* big trucks on the move. Its exclusive 5-way hydraulic filtering protection brings peak operating efficiency . . . extends service life. Strong, pin-connected axles prevent rolling and shifting of axles under load.

Your Allis-Chalmers dealer will demonstrate this 4,000-lb carry capacity TL-12, or any of the other Allis-Chalmers tractor loader models — ranging in carry capacities from 3,600 to 9,000 lb — in power from 76.5 to 130 maximum hp. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wis.

4,000-lb carry capacity
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76.5 maximum hp (diesel)
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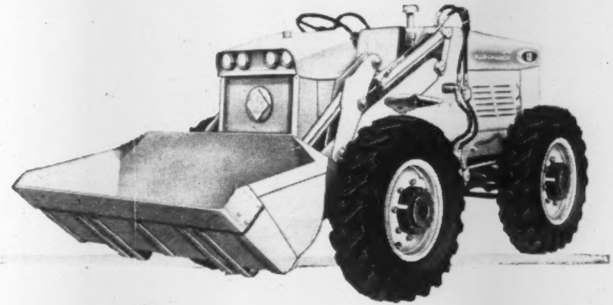

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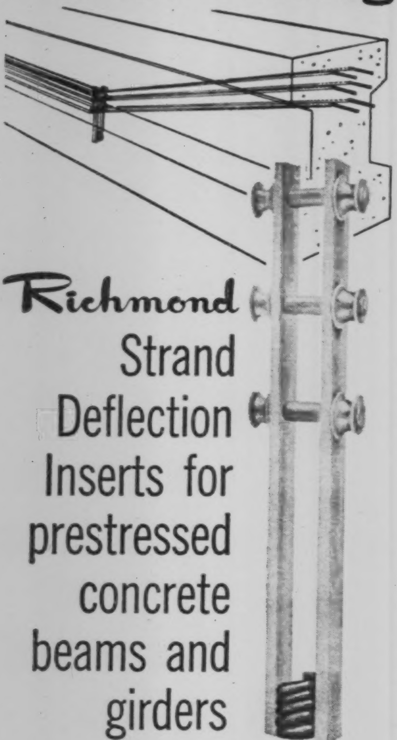

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Richmond Strand Deflection Inserts for prestressed concrete beams and girders

Included in Richmond's complete line of inserts and accessories for prestressed concrete are a variety of strand deflecting devices, designed to accommodate ¾", 1" and 1¼" bolts or eye bolts to suit your project and match your pretensioning bench.

Richmond Strand Deflectors are manufactured for single, double and triple lines of strands and are available with or without keepers or rollers.

There is a standard line of Richmond Strand Deflection Inserts but, since requirements for deflecting devices vary widely, special units can be manufactured on request to suit individual needs.

For information about Richmond-engineered Strand Deflection Inserts for prestressed beams and girders contact us or our distributors: Intercontinental Equipment Co., Inc., 120 Broadway, New York 5, N. Y....and if you have a specific concreting problem, ask our Technical Department about it—they can help you. Write to:—

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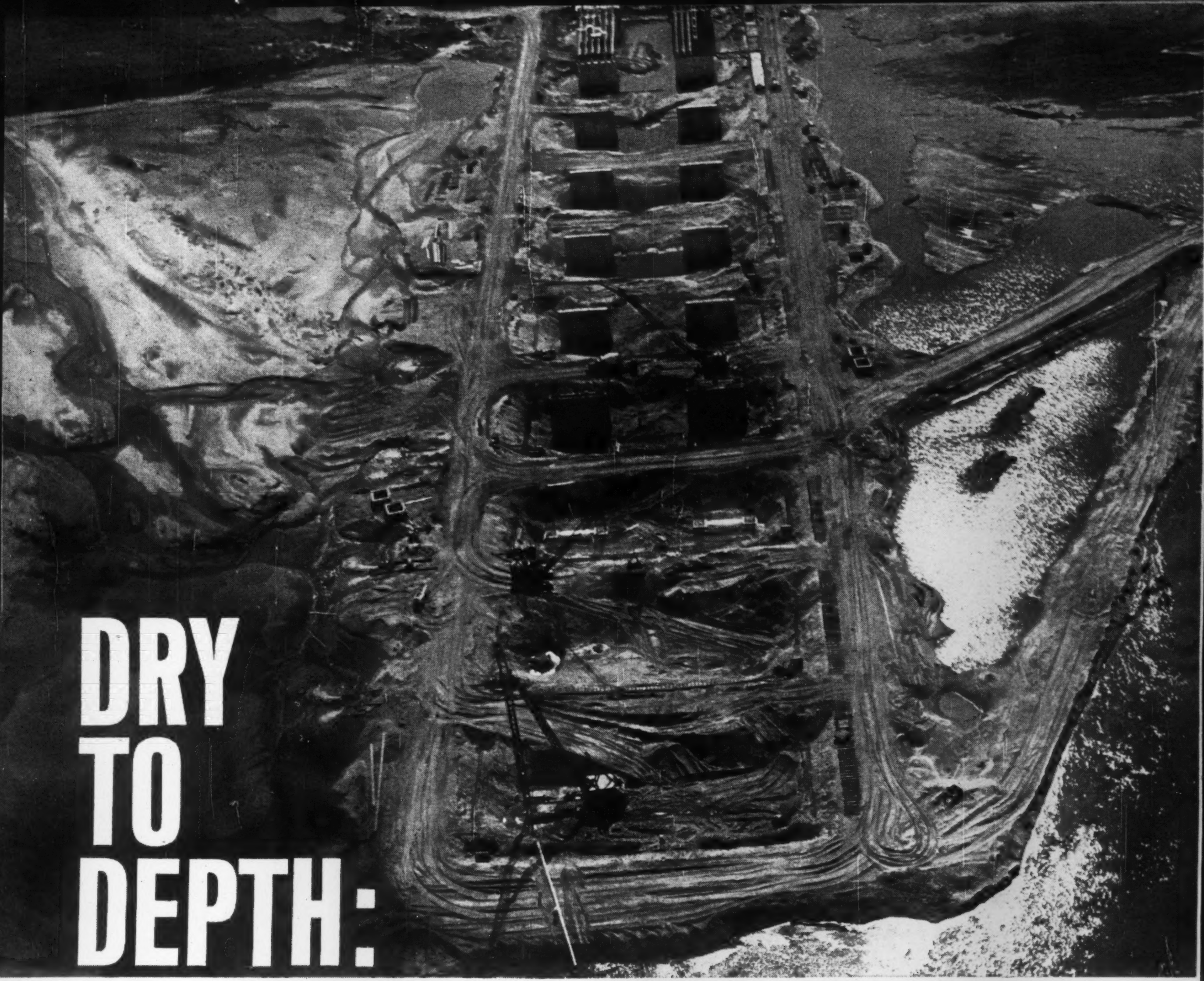

DRY TO DEPTH:

Stang pumps 35,000 gpm of water to dewater in the treacherous Platte River

Bridge jobs are often dewatering problems and the project pictured above is a case in point. Bridging the Platte River, the twin lane 60′ wide, 1500′ long crossing required 26 piers. The problem of quickly dewatering the sandy site of these piers 18′ below water table without disrupting the planned progress of the contractor was neatly solved by the Stang Corporation. After doing a complete analysis of the project requirements, Stang engineers designed a unique "leapfrog" wellpoint operation whereby five independent systems were placed around the first group of piers and then individually moved up as each successive pier was completed—a fast, efficient and effective dewatering job that let the contractor set up the project on a production basis. Solutions to dewatering problems such as this are the specialty of Stang; through proper engineering analysis and design Stang professionals continually save contractors time, money and trouble. Give them an opportunity to help you on your next dewatering problem. Contact any of their seven national depots and there'll be a man on the job in the morning.

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6-09

Nuclear physics is the basis of gamma ray equipment used to measure sub-surface densities

Scientific readings ...recorded in the

Sponsored by the American Association of State Highway Officials (AASHO), this 27-million-dollar test will provide "statistically unassailable" facts on modern pavement design.

On November 30th traffic ended on five test loops at Ottawa, Illinois. 17 million miles of travel have been marked up. Vital data have been pouring in, useful new facts on pavement performance are evident.

The entire National Road Test project is the most scientific experiment ever carried out on highway pavements. Modern statistical techniques for test section layout assure the total reliability and impartiality of findings. The newest in instrumentation, recording and automatic data processing equipment are providing a tremendous volume of data—free from human reading and transcription error.

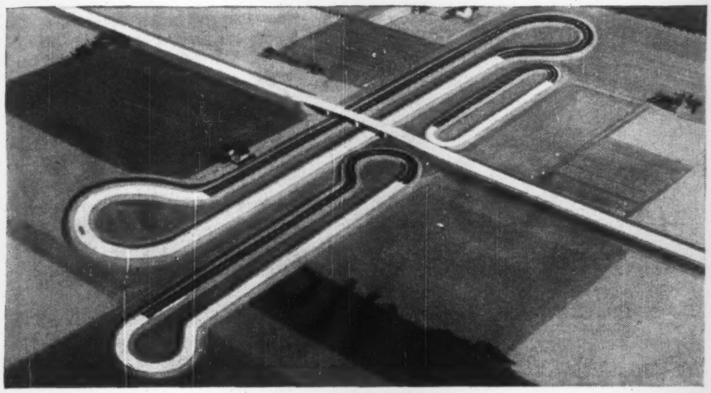
Electronic computers, of course, play a major role in data analysis. Some 100 programs have been written for the computers—so complicated that as much as 2 weeks were needed to set up a single program.

The final result—a storehouse of engineering information, the conclusive facts needed by every engineer, official and legislator to plan and build the most practical, efficient road system possible.

For Interstate highways, roads and streets of all classes, the National Road Test will prove the most significant test of pavement types of all time.

PORTLAND CEMENT ASSOCIATION *A national organization to improve and extend the uses of concrete*

by the millions National Road Test!



836 test sections—repeating nearly 200 different pavement combinations make up the loops. Over 1,100,000 load applications have been recorded.

The National Road Test is sponsored by the American Association of State Highway Officials.

Represented on the National Advisory Committee: American Association of State Highway Officials, American Automobile Association, American Trucking Associations, Inc., Asphalt Institute, Automobile Manufacturers Association, Automotive Safety Foundation, Bureau of Public Roads, Department of the Army, Highway Research Board, National Highway Users Conference, Portland Cement Association, Truck Trailer Manufacturers Association; the petroleum industry, state highway departments, the tire industry and universities.

Administered and directed by the Highway Research Board of the National Academy of Sciences—National Research Council.

Operated by a staff of engineering and technical specialists.

THIN SHELL CONCRETE ROOF PROVIDES UNOBSTRUCTED FLOOR AREA

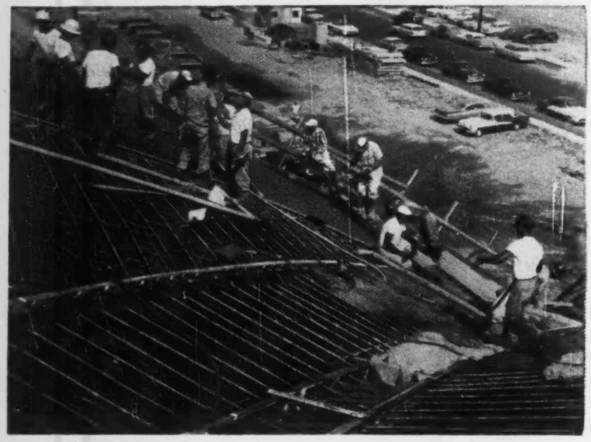
Lehigh Early Strength Cement Saved Construction Time

• Six intersecting concrete shells form the multi-domed roof of this newly completed, already famous automated post office. Although it's nearly as large as three football fields (300′ x 420′) the entire structure has only *two* interior columns . . . a design which provided tremendous flexibility for the arrangement and experimental modification of complex mechanical equipment.

Construction of the roof, with its parabolic slopes and rises, was a challenging operation. But careful planning and precise scheduling by Gilbane Building Company was seen in the progress of the work, much of which had to be done during short Rhode Island winter days.

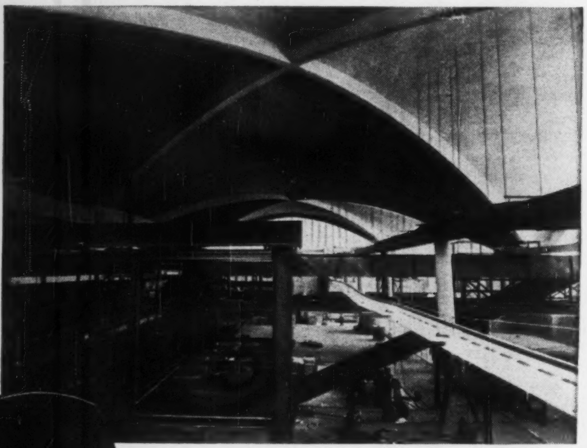
Contributing to the fast concreting schedule was Lehigh Early Strength Cement, which made it possible to start stripping forms in just 7 days. This is about ¼ the time that would have been required with normal cement . . . and is typical of the advantages of Lehigh Early Strength Cement in modern concrete construction. Lehigh Portland Cement Company, Allentown, Penna.

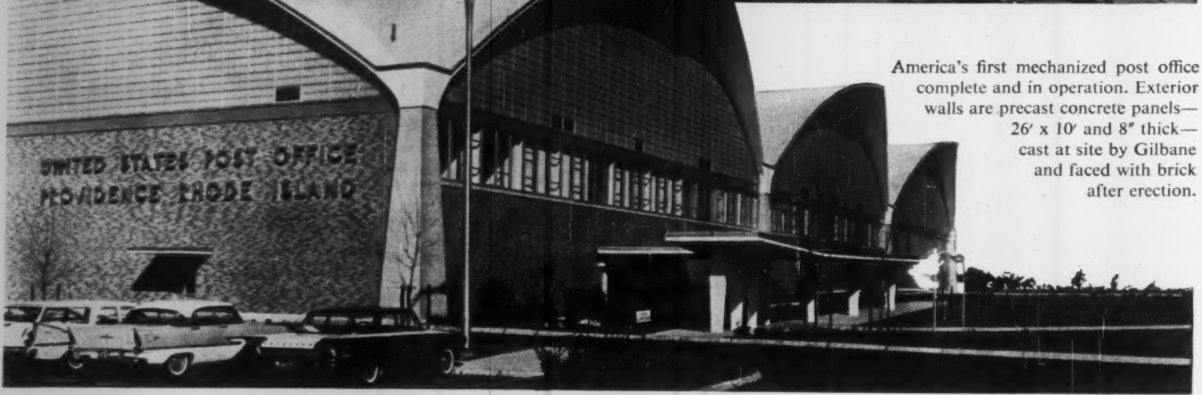
LEHIGH CEMENTS



Placing lightweight—110 lbs. per cu. ft.—concrete was an exacting operation. Two pours, one of 540 cu. yds. and one of 260 cu. yds., were required for each 140′ x 150′ shell unit. Shells are only 6″ thick.

Complex mechanical equipment needing unobstructed floor area can be seen in this view. Height from floor to peak of each dome is 55′.





America's first mechanized post office complete and in operation. Exterior walls are precast concrete panels—26′ x 10′ and 8″ thick—cast at site by Gilbane and faced with brick after erection.

• *Project Developer and Coordinator:* ITT—Intelex Systems Inc., New York City.
• *Architect-Engineer:* Charles A. Maguire & Associates, Providence, R. I. • *Contractor:* Gilbane Building Co., Providence, R. I. and New York, N. Y.
• *Lightweight Concrete:* Pawtucket Redi-Mix Concrete Co., Pawtucket, R. I. • *Regular Concrete:* Morse Sand & Gravel Co., Attleboro, Mass.

Reader Comment

More for the Dollar

SIR—I take strong exception to the innuendo by Procter & Gamble's R. J. Short in his speech reproduced as an editorial (ENR Dec. 8, 1960, p. 100).

The advances in labor saving devices in the heavy equipment field have been phenomenal, new types of formwork are too numerous to mention, new hand power tools are available for almost every operation, new materials are coming on the market daily. Take curtain walling and prestressed concrete as two examples.

What Mr. Short doesn't seem to realize—and he should—is the complexity of today's building versus twenty years ago. The buyer of a building today gets more for his dollar than ever. Take the cost of air-conditioning a modern office building—this was not in the price twenty years ago. How about electronic controls and elevator systems?

A vast amount of both individual company research, government research and industry sponsored research is being done. No one questions that more can be done and this goes for Procter & Gamble, too. Let Mr. Short check the prices of their products over the years—he won't find many selling for less every year.

J. E. HARRINGTON
Anglin-Norcross Corp., Ltd.
Montreal, Quebec

Shorter Short Cut

SIR—Mr. Norman DeWind suggests a trans-Michigan canal as a Great Lakes short-cut (ENR Aug. 11, 1960, p. 16). Might I further suggest a trans-Canada canal, from Lake Ontario to Georgian Bay, Lake Huron.

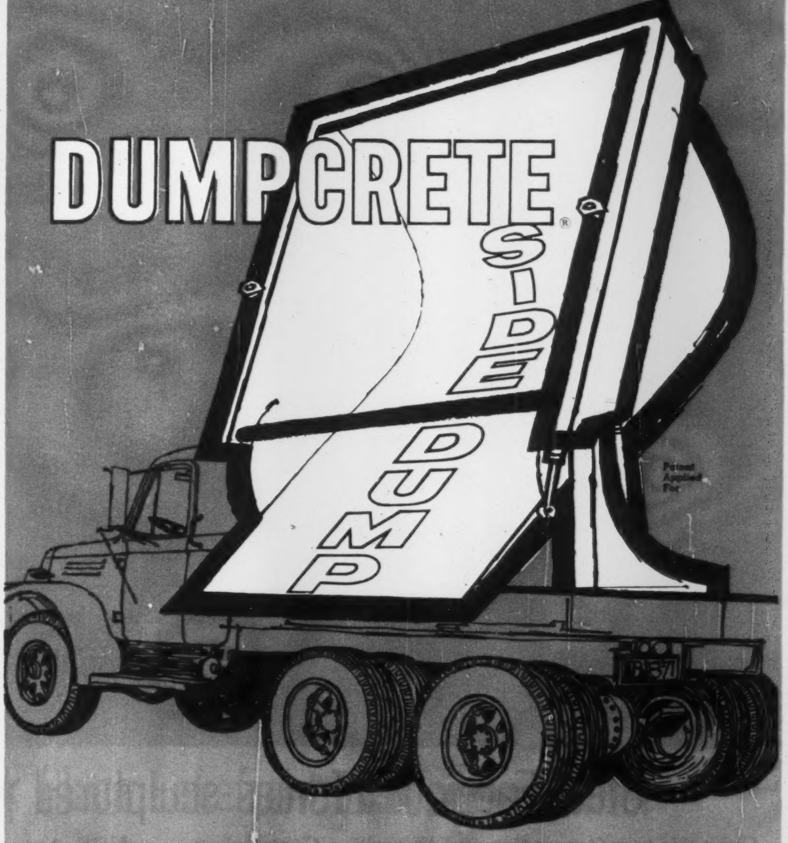
This would add to safety of passages and save much time for Great Lakes shipping. It would also help develop Lake Superior ports in both the U. S. and Canada. A trans-Canada canal would be only half as long as Mr. DeWind's Lake Erie to Lake Michigan waterway, however more rock would be encountered.

The trans-Canada route would relieve congestion in the Detroit and St. Clair rivers, the channel across Lake St. Clair, and most important, the Welland Canal.

J. STANLEY JEFFREY, P. E.
Jackson, Mich.

(*Reader Comment continued p. 12*)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.



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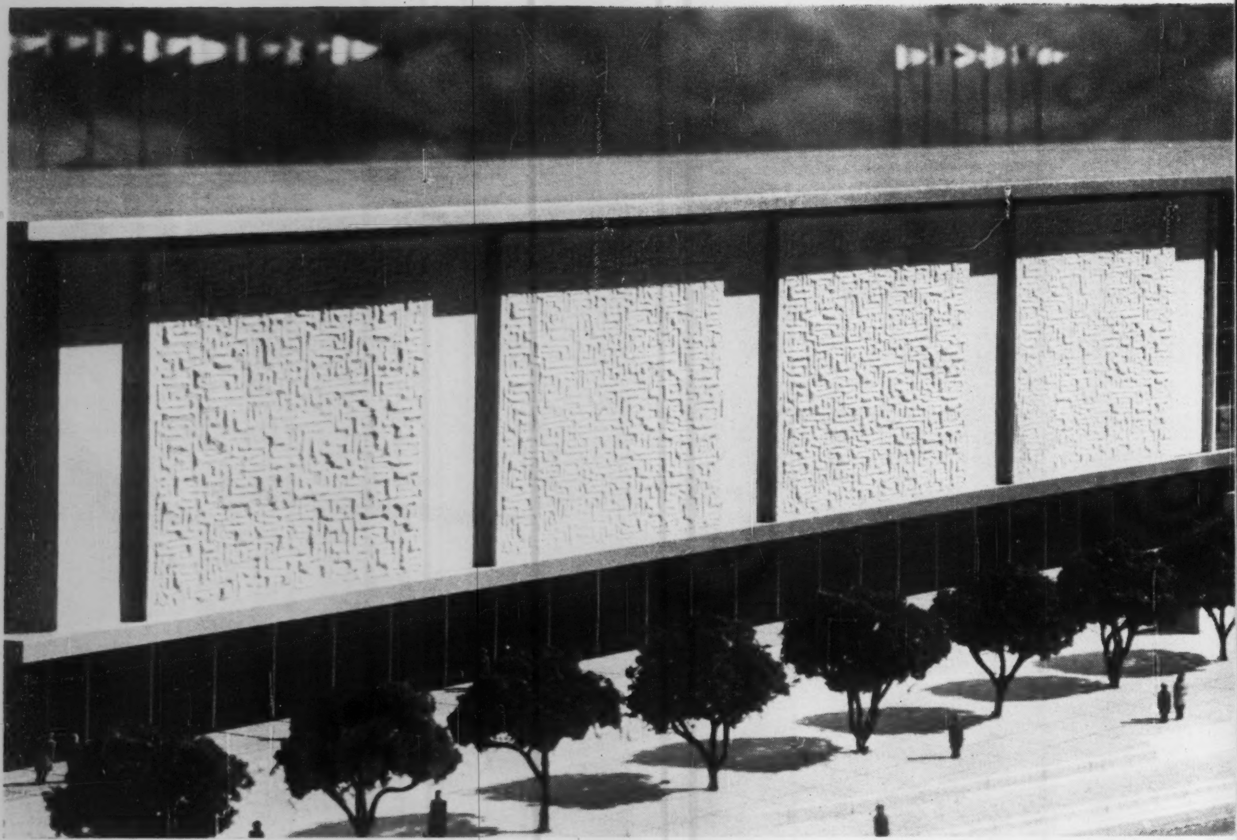


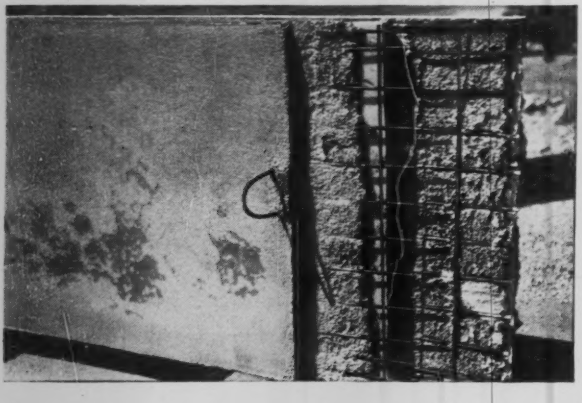
Steel Fabric reinforces sculptured precast concrete panels

Chicago's new Convention and Exposition Center gives you a lot to marvel at. For one thing, you could put Wrigley Field, Comiskey Park and Yankee Stadium under its roof. For another, it is spectacularly beautiful from any angle.

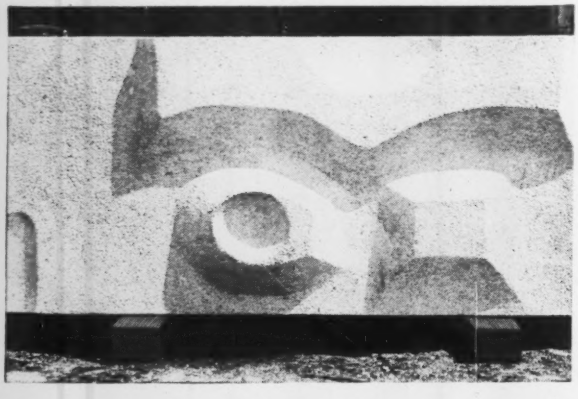
But only architects, engineers and contractors will fully appreciate how some of the ingenious structural and architectural effects were achieved. So, look closely at the photographs and don't forget the unusual sculptured panels are of precast concrete reinforced with USS American Welded Wire Fabric.

USS American Welded Wire Fabric was also used for concrete reinforcement of the pan-type floor construction. The floor is designed for 400 psi live loads with columns at 60-ft. centers. The joists are 14″ deep with the top 4½″ slab reinforced with welded wire fabric sheets. Welded wire fabric reinforcement was also used in the construction of the ground floor slabs, terrazzo floors and gypsum roof decks.

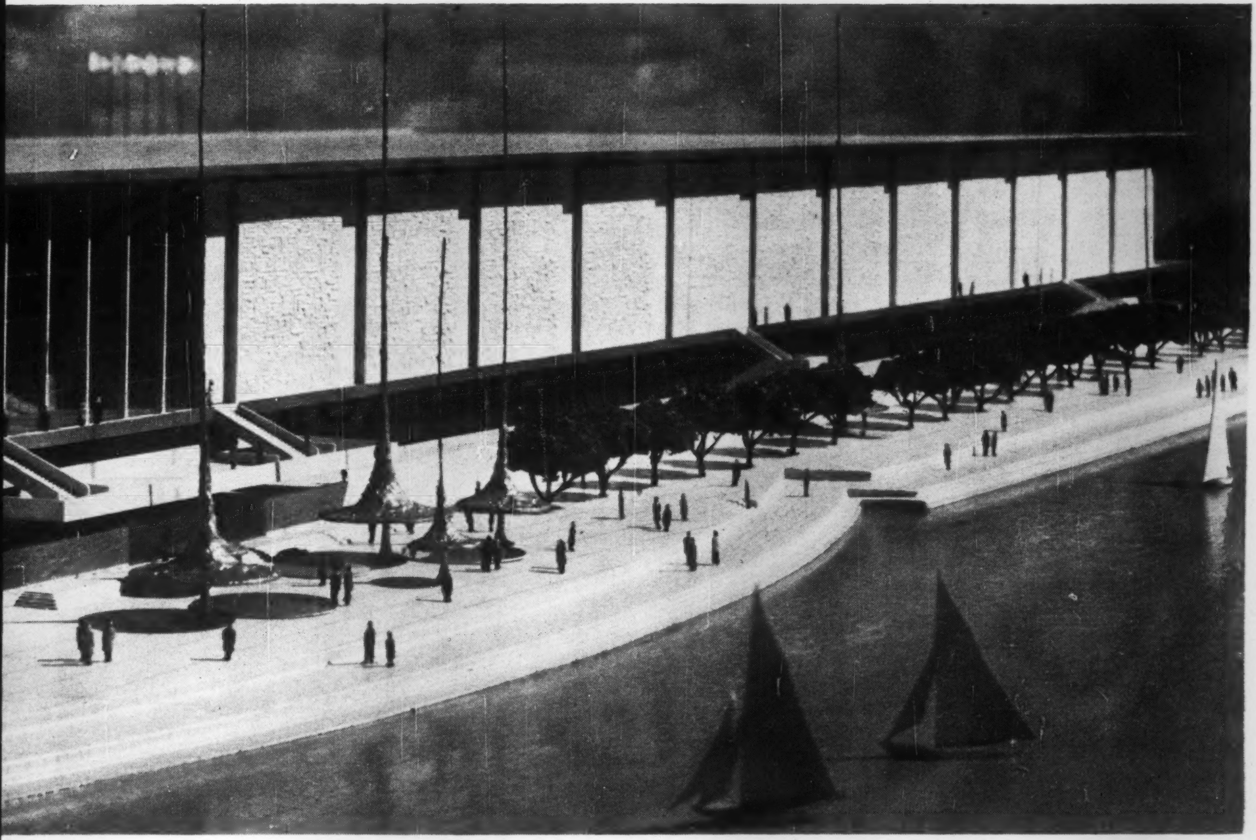
USS American Welded Wire Fabric is readily available in a variety of styles, sizes, lengths, widths and finishes—in wire gauges from 7/0 to 16 and with longitudi-



Rear view of a section of one of the precast reinforced concrete sculptured panels showing American Welded Wire Fabric, style 4 x 4—5/5.



This is front view of same section. Each 50 ft. high x 15 to 20 ft. wide panel consists of eleven of these sections in a vertical position.



in Chicago's McCormick Place Lakefront Exposition Center—

nal or transverse intervals of 2″ to 16″.

For more information on the advantages and applications of USS American Welded Wire Fabric, get in touch with our nearest Sales Office or write American Steel & Wire, Dept. 1112, 614 Superior Ave., N. W., Cleveland 13, Ohio.

USS and American are registered trademarks

Credits: Chicago's McCormick Place Lakefront Exposition Center—23rd Street and the Lakefront. *Chief Architect:* Alfred Shaw, *Consultants:* Carl A. Metz, John Dolio, Edward D. Stone, John Root, Victor Hofer. *General Contractor:* Gust K. Newberg Construction Co. *Welded Wire Fabric Distributor:* Joseph T. Ryerson & Son, Inc. *Posttensioning Wire Tendons:* Joseph T. Ryerson & Son, Inc. *Precast Wall Panels:* American-Marietta Co., Concrete Products Division.

American Steel & Wire
Division of
United States Steel

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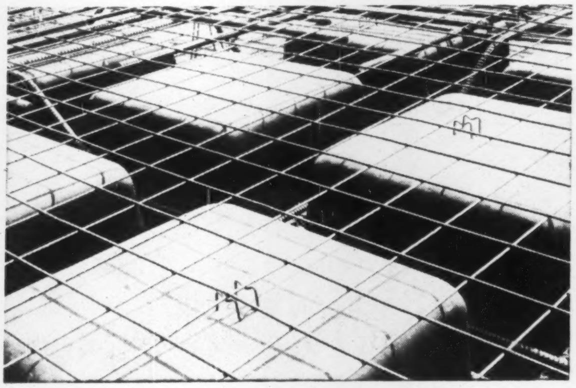
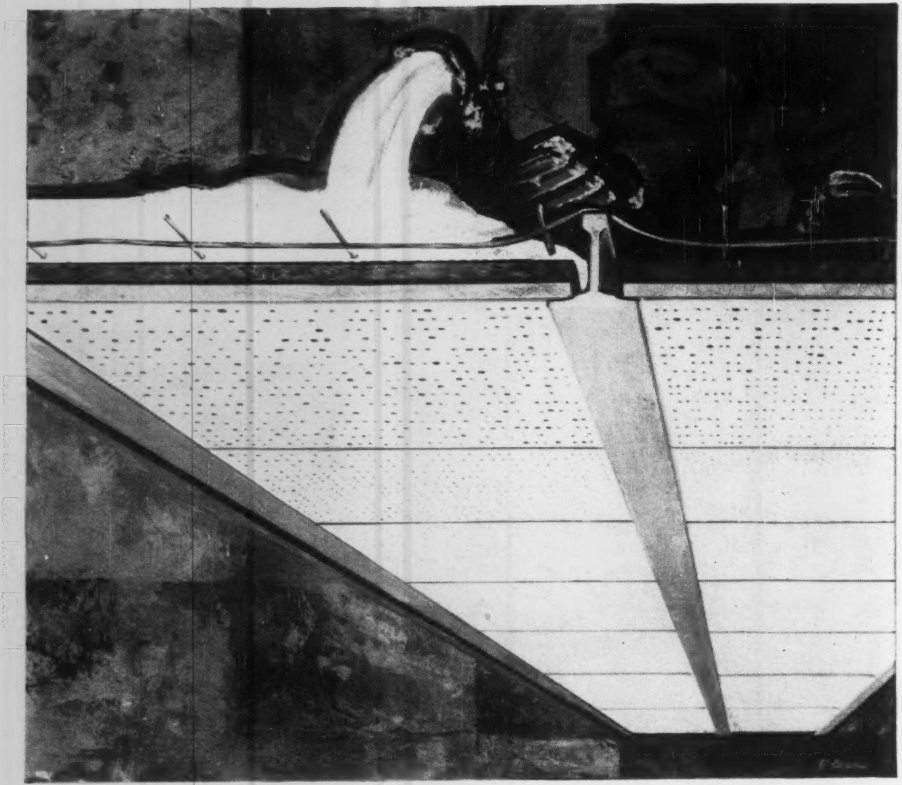
The cast-in-place pan-type reinforced concrete floor is designed for a live load of 400 psi.



Large sheets of USS American Welded Wire Fabric, style 6 x 6—2/2 used to reinforce the 4½″ thick concrete slabs are handled by two men.



3 things to look for in a poured roof deck:

Any soundly-designed poured-in-place roof deck should have these three essential features: (You'll find them all in Gold Bond Poured *Gypsum* Roof Decks.)

1. Allowance for temperature movement — Reinforcing wire mesh and bulb tees will allow temperature movement without disturbing the sound base for built-up roofing.

2. Resistance to uplift — When bulb tees are welded to the main purlins and embedded in the gypsum concrete, they have resisted uplift forces of up to 125 lbs./sq. ft.—80 lbs. more than normally required.

3. Strength of a monolithic slab — When complete, a Gold Bond Poured Gypsum Deck forms a solid, steel-reinforced 2″ slab of gypsum rock. It becomes an integral part of the building, adding structural strength able to resist fire, flood and hurricanes.

Look for all 3 of these features when you select a deck. A Gold Bond® Poured Gypsum Roof Deck has them all, plus the best possible fire insurance ratings. For a complete kit to help you design and specify poured gypsum decks, write Dept. EN-21.

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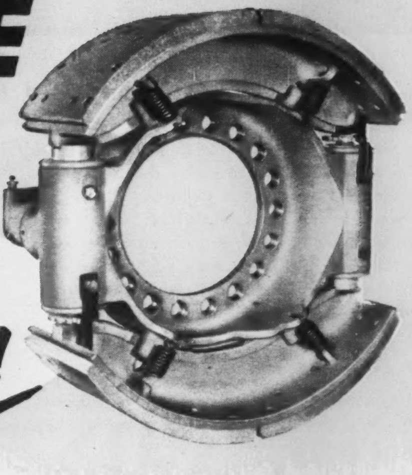

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- **Rugged Design**
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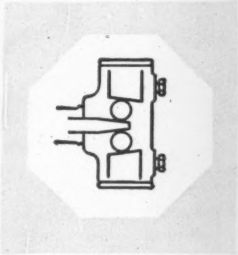

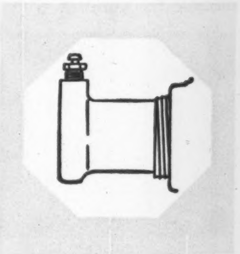

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United Air Lines new base at Chicago's O'Hare Field

Symons Forms Used to Pour Reservoir

Standing out prominently among the airport improvements at Chicago's O'Hare Field is that sector of the field in which United Air Lines constructed a new $4,645,000 base. Concrete pouring was under the direction of superintendent Fritz Washburn of Wm. E. Schweitzer Construction Company, Evanston, Illinois. Washburn and his crew used Symons Forms—many of the forms had been re-used 40 times. The job, a Reservoir 200' long by 58' wide by 17' high. Approximately 1/3 of the walls were poured in one operation. The entire hangar is resting on a 2'9" base pad which was also poured with Symons Forms. Two cross walls were 58' long. Schweitzer used a total of 8000 square feet of Symons Forms to pour approximately 384 cubic yards of concrete.

To form the columns, Schweitzer used Symons Column Clamps. They automatically square the columns.

Symons Forms are rented with purchase option. Symons Clamp & Mfg. Co., 4265 Diversey Avenue, Dept. B-1, Chicago 39, Illinois.

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Hollow Slabs

Sir—In reference to the article on the use of cardboard tubes in the 26-in. slab of the parking garage in Omaha as being the largest to be used in building construction (ENR Dec. 15, 1960, p.42), we offer at least one exception.

In 1955 we designed a first-floor, prestressed, post-tensioned slab 32-in. thick with 25-in. outside diameter Sonovoids on 30-in. centers. The voids were 20% larger than those noted in the article. Our slab supports a two-story masonry building over part of its 100x130-ft area, and was designed with two-span continuous joists resting on a five-span continuous girder of the same depth.

Edward H. Parker
Structural Engineer
Parker & Parker
Los Angeles, Calif.

Editor's Note: Although the total voids in the slab were 20% larger, as noted by Mr. Parker, it is pertinent to point out that the individual tubes were only about 11% larger. They were also placed closer together than in the Omaha building.

Corrections

The head above the table of construction materials shipments in ENR's Annual Report and Forecast (ENR Jan. 26, p. 52) should have said "Shipments Decline for Most Key Materials" instead of "Shipments Climb . . ." And on p. 44 in the same issue, those are millions of dollars, so add 000,000 instead of 000.

For Your Calendar . . .

American Concrete Institute, annual convention, Chase-Park Plaza Hotels, St. Louis, Mo., Feb. 20-23. Write: Tom Akas, American Concrete Institute, P. O. Box 4754, Redford Station, Detroit 19, Mich.

Associated General Contractors of America, annual convention, Statler Hilton Hotel, Boston, Mass., Feb. 27-March 2. Write: C. I. Mehl, Associated General Contractors of America, Munsey Bldg., Washington 4, D. C.

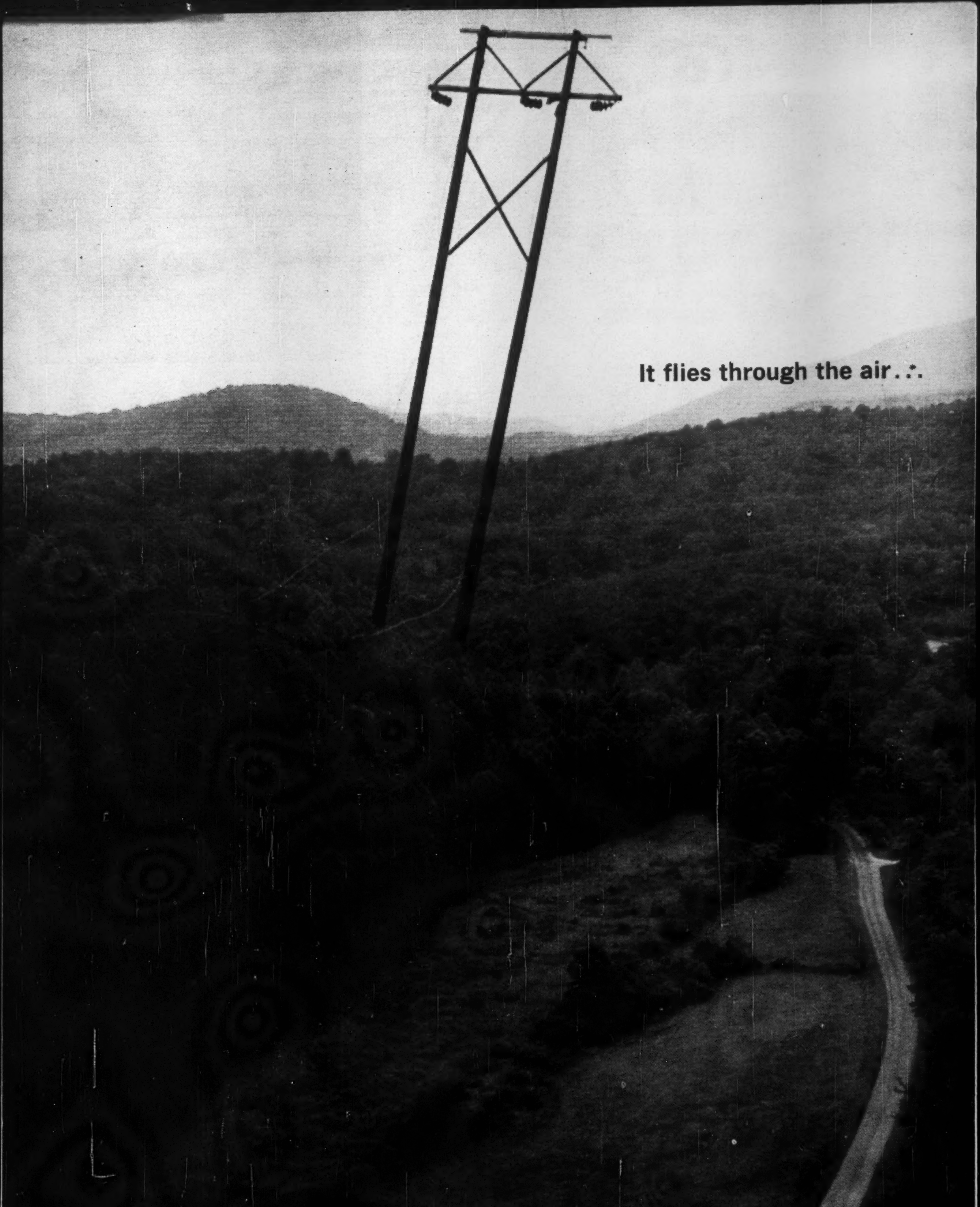
National Lighting Exposition, New York Coliseum, New York City, March 5-8. Write: Dorothy Ross Associates, 166 W. 58th St., New York, N. Y.

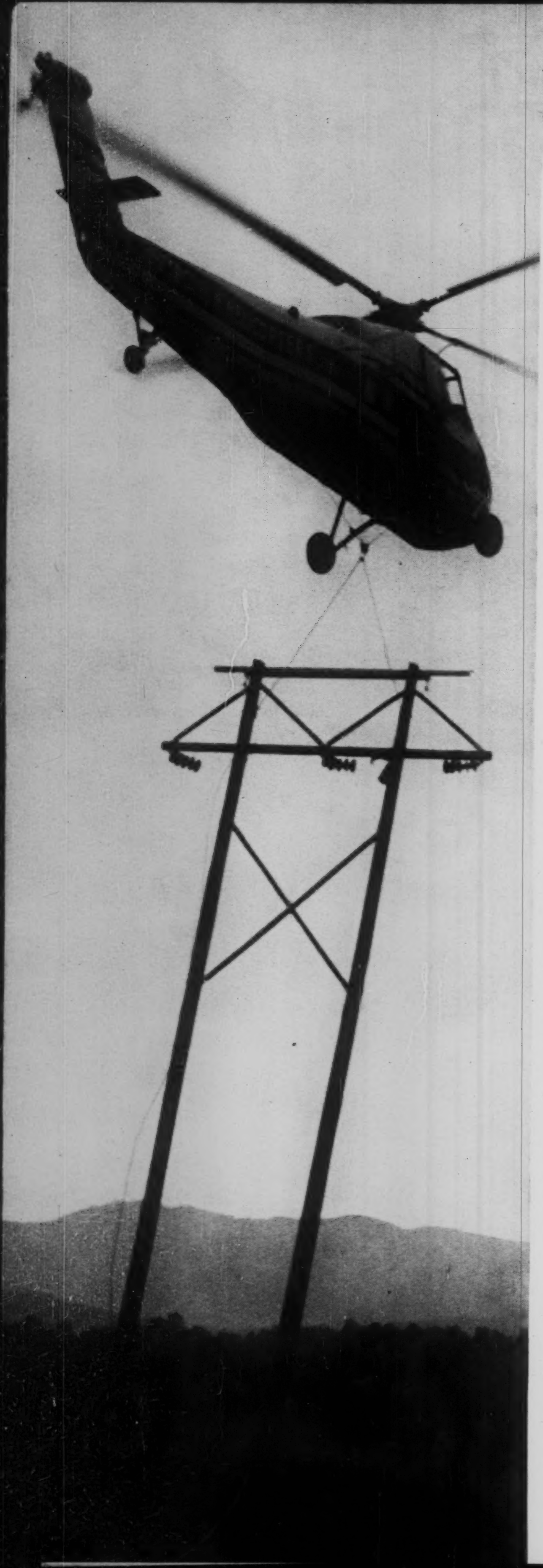
American Road Builder's Association, annual convention, Chalfonte-Haddon Hall, Atlantic City, N. J., March 5-8. Write: ARBA Housing Bureau, Att. Mr. Edward Jordan, Chalfonte-Haddon Hall, Atlantic City, N. J.

12th Western Metal Congress, Western Metal Exposition, American Society for Metals, Ambassador Hotel and Pan-Pacific Auditorium, San Francisco, Calif., March 20-24. Write: James C. Nelson, American Society for Metals, Metals Park (Novelty) Ohio.

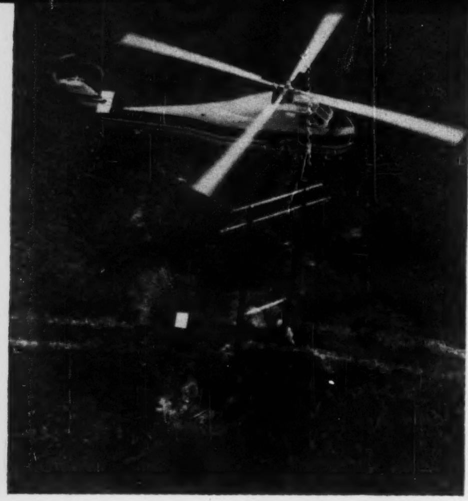
Annual Welding Exposition, American Welding Society, New York Coliseum, New York City, April 18-20. Write: Arthur L. Phillips, American Welding Society, 33 W. 39th St., New York 18, N. Y.

American Institute of Architects, annual convention, Philadelphia, Pa., April 24-28. Write: The American Institute of Architects, 1735 New York Ave., Washington 6, D. C.


It flies through the air . . .



Setting H-frames
in pre-dug holes
along right-of-way,
helicopter acts
as an airborne crane.



at the lowest of costs

American Electric Power Demonstrates New Helicopter Construction Methods... Cuts Construction Time to One-Third

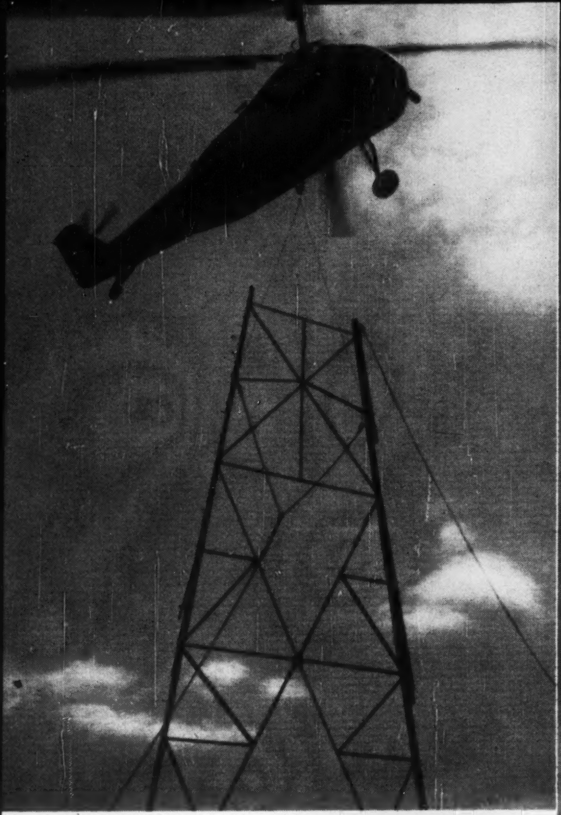
In a history-making experiment in power line construction, American Electric Power Company put a Sikorsky helicopter to work in virtually all phases of power line construction with results that point to a prominent new role for helicopters in the near future.

For the first time, a construction project was planned from the start to take advantage of the helicopter's unique abilities . . . as a go-anywhere truck . . . as a flying crane . . . and as a high speed cable stringer. During the course of the six-week operation, the helicopter chalked up records like these:

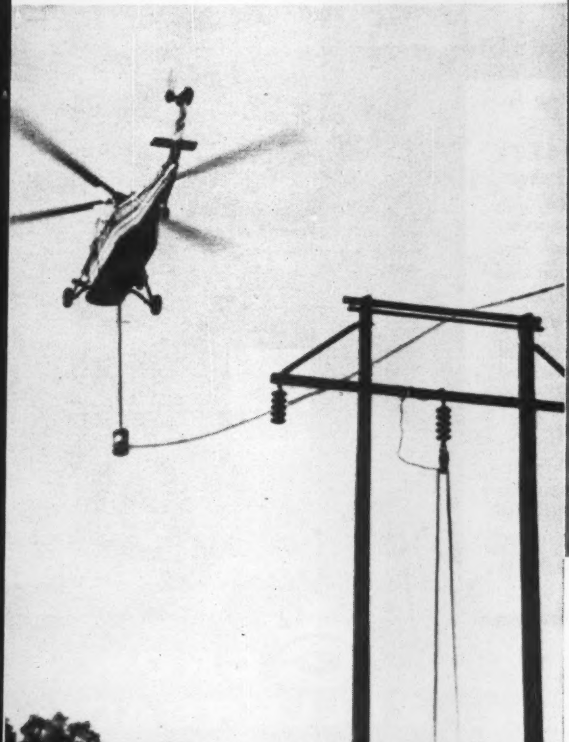
On its first morning in operation, it transported all the steel for 4.5 miles of right-of-way—a total of 268,000 pounds of steel for 17 towers—from staging areas to tower sites in just 4½ flying hours. Conventional methods would have taken three weeks. In erecting steel towers, the helicopter demonstrated it could help crews raise two 60-foot side panels in an average of 14 minutes—normally 30 man-hours of work. Used as a flying cable stringer, the helicopter strung 121,000 feet of winch cable in just 4½ hours.

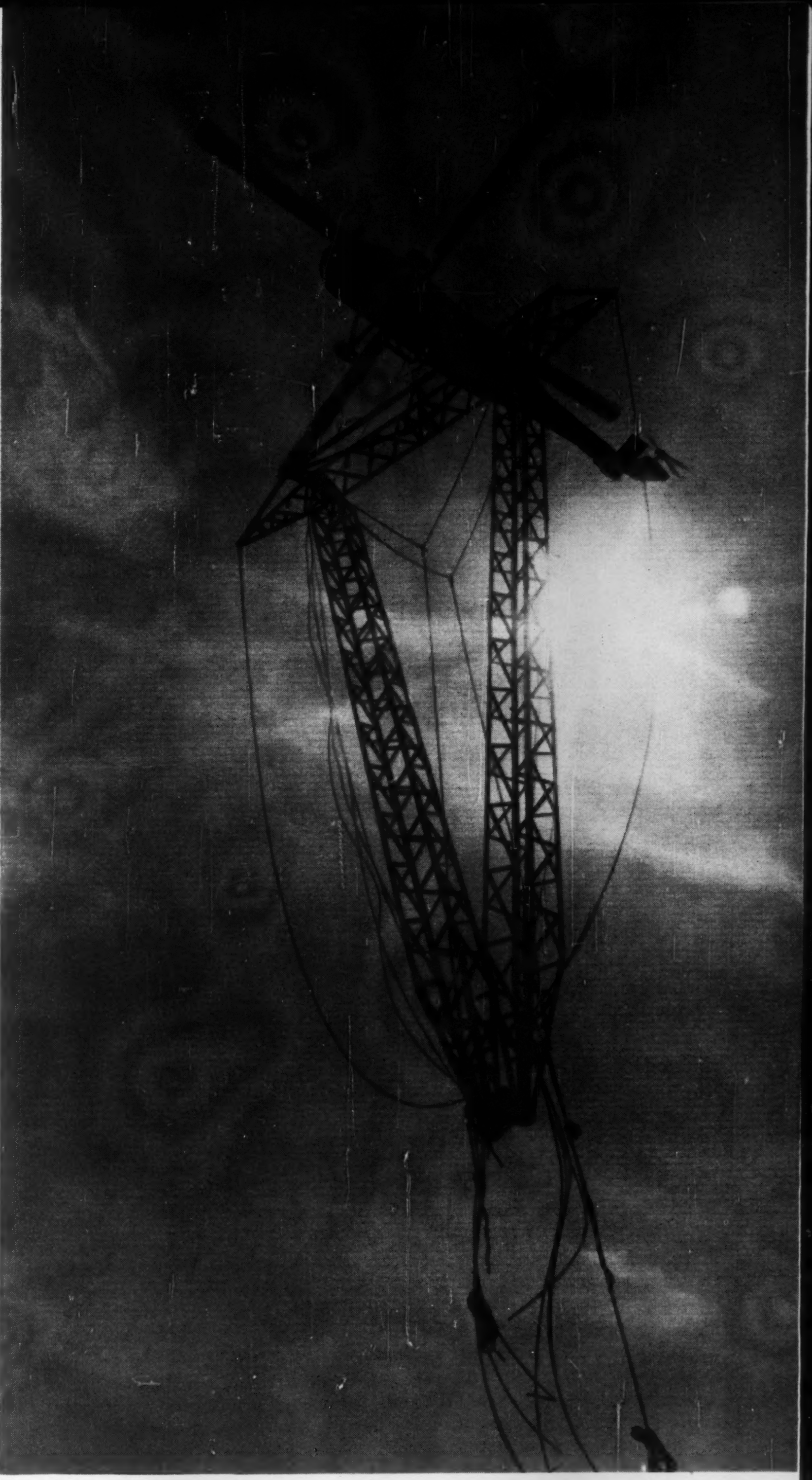
In total, the operation was cut to one-third the time it would have taken using ordinary methods. Two lines, totaling 29 miles, were constructed. Helicopter and pilot services were furnished to Appalachian Power Co., A.E.P.'s subsidiary, by Petroleum Helicopters, Inc.

As a result of the helicopter's outstanding success in this project, the Sikorsky S-58 is expected to play an important part in the construction of several 345KV lines now being planned.



(above) Erecting assembled panels is another flying crane operation. Panels go up in as little as two minutes. (below) Cable stringing: helicopter unspooled 9,600 feet per flight. In a typical 4½-hour period, 121,000 feet were strung.





A look at the future. In the first demonstration of its kind, a completely assembled tower is flown to site and bolted to footings. Entire operation from staging area to final bolt took just 10 minutes. Assembled with guys, experimental aluminum V tower for 138KV line weighed 2,900 pounds.

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Another concrete example of what ZEECON formulations can do for you!

■ The beautiful Southgate Towers project required more than 20,000 cubic yards of concrete—every bit of it made with ChemCon, a concrete admixture formulated from Crown Zellerbach's Zeecon. Read what contractor Robert Turchin says about ChemCon, the controlled dispersant that:

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For your next job we urge you to investigate the advantages of additives containing Zeecon. Formulations are available in set-retarding or non-retarding grades, and in some areas with or without added air entrainment.

Southgate Towers, Miami Beach, Fla. Two 14-story buildings containing 550 luxury apartments and guest suites. Architect: Melvin Grossman; Engineers: D. E. Britt Associates; General Contractor: Robert L. Turchin, Inc.; all of Miami Beach. Concrete supplier: Acme Concrete Corp., Hialeah; Additive: "ChemCon" by Florida Laboratories Gainesville, Fla.

For additional Zeecon information write to your nearest formulator or to Crown Zellerbach.

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Concrete Chemicals Corporation,
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Redwood City, California

ChemCon
Florida Laboratories P. O. Box 672,
Gainesville, Fla.

Econo-MIX
Super Concrete Emulsions, Ltd.,
1372 East 15th St., Los Angeles, Calif.

CONEX
Wescon Products, Ltd.,
3408 West 40th Avenue,
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Euclid Chemical Company,
19218 Redwood Road,
Cleveland 10, Ohio

EZ-POUR
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431 West 4th, Logan, Utah

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Chemical Products Division
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THE CONSTRUCTION WEEK

ROAD BIDS STILL STABLE–The cost of highway construction dropped 1.2% during the fourth quarter of 1960, according to BPR's "composite mile" index of average bid prices on federal-aid contracts. The index fell to 135.0 (1946 = 100), wiping out a slight gain registered in the preceding quarter. The index still is markedly below the record high (143.4) of fourth quarter, 1957.

WATER WORRIES AT GITMO–A positive feasibility report on sea water conversion for the U. S. Naval base on Guantanamo Bay took on unexpected urgency last week when Fidel Castro nationalized the aqueduct supplying the base. The report, which was only recently completed, was made by Singmaster & Breyer, New York City consultants.

SALES INSURANCE–Homebuilders in the Chicago area will try to lure buyers this spring with insurance policies that guarantee the monthly mortgage payment in the event of accident, sickness or unemployment. The policies, which will come with the deed, will insure mortgage payments for up to five years in the event of sickness or accident, and up to six months in case of unemployment.

BARTER DEAL–A New Jersey contractor will level off a 50-ft-high hill in return for one dollar and the 3 million cu yd of traprock it will remove. The flattened hill will provide building space for Montclair State College; the traprock will provide fill for the contractor's other jobs. The contractor, Houdaille Construction Materials, Inc., Morristown, N. J., will also turn over to the college some adjoining land, which the company now uses as a quarry.

BIG YEAR FOR KANSAS–This week in Los Angeles, Richard F. Newlin takes over the presidency of the Associated Equipment Distributors. He's from Kansas. Next month in Boston, Clare Miller, Kansas roadbuilder, will become new president of the Associated General Contractors. And in Seattle the first week of July, M. A. Wilson, consultant of Salina, Kan., will become president of the National Society of Professional Engineers. This year, incidentally, is Kansas' 100th.

THE OUT HAD AN IN–Although the change of federal administration threw former Federal Highway Administrator Bertram D. Tallamy out of a job, he landed with both feet not only on the ground, but under a desk. The New York State Thruway Authority, from which he resigned as chairman in 1956 to head the Bureau of Public Roads, has retained him as a consultant on maintenance at $200 a day plus expenses. Mr. Tallamy's salary while at the bureau was $20,000 a year.

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WASHINGTON OBSERVER

- **Compromise on Interstate financing?**
- **Water specifics coming**
- **Hopes for no-strike pledge rise**

● **The chances are President Kennedy will come up with a compromise plan to finance the Interstate Highway Program.** It may take the form of maintaining the present four-cent-a-gallon tax on gasoline, instead of boosting it to 4½ cents, as requested by Mr. Eisenhower, and decreasing rather than eliminating the planned diversion of funds from the general treasury.

A final decision has yet to be made, however. Mr. Kennedy wants to give his new tax-policy expert, Assistant Treasury Secretary Stanley S. Surrey, time to review the highway financing problem carefully. A decision should be announced in the President's special budget message, due in a week or so.

Mr. Kennedy left a big question mark over highway financing when he said he would go along with Mr. Eisenhower's proposal for new government revenue "in general." By that press conference statement, he left the way open to accept, reject or amend the Eisenhower proposals.

—

● **Specific water-construction projects will be laid before Congress piecemeal** during the next several weeks to implement the broad goals of the Kerr report (ENR Feb. 2, p. 21). Some of them will be included in Mr. Kennedy's forthcoming budget message. Others will be offered by the chairmen of the Senate Public Works, Interior, Commerce, and Agriculture committees, all of whom were members of the Kerr committee on water resources.

Sen. Robert S. Kerr (D., Oakla.) wanted it this way. He insists his report is very specific on the nation's water needs by the year 2000, and now the White House and various government agencies must decide how best to meet these needs. Already working on recommendations are the Reclamation Bureau, Corps of Engineers and Public Health Service.

—

● **Union leaders talk more optimistically about prospects for a no-strike pledge at missile sites** after a survey of the base at Marysville, Calif., with Air Force officials. They view this as the first step of a new cooperative effort to curb labor trouble at the site.

But the craft union chiefs stop short of promising a no-strike pledge. Impressed as they were with the Marysville survey, they still contend there is no ready route for such a pact with government agencies. The subject will be reviewed at the AFL-CIO Building Trades Department meeting in Miami next week.

—

● **The Pentagon's top civilian job dealing with military construction policy has been abolished** by Defense Secretary Robert S. McNamara. The post of Assistant Secretary of Defense for Properties and Installations was killed as part of Mr. McNamara's plan to streamline Pentagon procedures by reducing the number of assistant secretaries.

Functions of the abolished post have been assumed by Thomas Morris—his new title: Assistant Secretary for Installations and Logistics. As such, he will recommend, review and evaluate construction programs of the military.

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Kennedy prescribes...

- **Stepped-up urban renewal**
- **Lower FHA interest rates**
- **Faster highway building**

Construction Medicine for the Economy

President John F. Kennedy is spelling out in specific terms his program to combat the recession and spur economic growth—and the emphasis is on stimulating housing and speeding construction projects.

Following his economic message of last week, the President is readying legislation he hopes to push through Congress on an emergency basis. On Capitol Hill it is drawing fire both from those who think it is inadequate and those who think it involves an unwarranted boost in welfare spending.

Republican leaders criticize it on the one hand as "not making a very big impact" and on the other hand as "costing billions." They promise to take a very careful look at each item in the program. Liberal Democrats, while not very critical openly, are saying privately that Mr. Kennedy is talking about a serious recession but prescribing for a mild one.

There is substantial agreement that, on spending programs, Kennedy so far is tackling mostly the "easy stuff," the step-ups in procurement, highway spending and the like.

Mr. Kennedy put no price tag on his program. He intends to send a budget message—perhaps coupled with his tax package—to Congress in about two weeks. The budget message will spell out costs. Administration officials make an educated guess, however, that the whole Kennedy program will mean about $3 billion more in spending during fiscal 1962 than President Eisenhower proposed. This includes the school construction bill and an omnibus housing measure, both yet to come. The size of these measures has not been determined.

Coming only 14 days after Kennedy took office, the message reflected the hasty work of his economic advisers and department heads, who sought anti-recession measures that could be put into effect quickly. The President promised to send to Congress within the next few weeks further messages spelling out more complex measures.

Mr. Kennedy took these steps directly affecting the construction field:

- Directed the FHA to reduce the maximum permissible interest rate on FHA-insured loans from 5¾ to 5½%; cut in half the stock subscription requirement applicable to sales of mortgages in the Federal National Mortgage Association (Fannie Mae).
- Reduced interest rates on new loans for projects under the Community Facilities Administration (mostly sewer and water projects) by ¼%, broadened the number of communities by including those under 10,000 population, and made more types of public facility projects eligible. Interest rates will come down about 4¼%.
- Instructed the Housing and Home Finance Agency to speed up its projects like college housing; and Mr. Kennedy wired 297 mayors urging them to step up urban renewal projects.
- Urged rapid enactment of depressed areas legislation already under consideration by Congress.
- Directed all department and agency heads to expedite procurement and construction projects, emphasizing those that will have an early effect on unemployment; asked for reports by February 17 of going public works projects that can be speeded up quickly if necessary appropriations were forthcoming.
- Ordered immediate spending where feasible of the $724 million appropriated for federal highway construction for the remainder of the current fiscal year (to July 1); asked the Secretary of Commerce to recommend ways of increasing the flow of highway funds into actual new construction.

In the private housing field, Mr. Kennedy's economic advisers say that mandatory lowering of the FHA interest rates, while not actually increasing the credit supply, may tend to bring the price of money down. Mortgage lenders, they say, advise that the situation is ripe for a decline in interest rates, that rates have not actually dropped as much as they should have in view of the mounting sums of money available for loans. This federal action, coupled with cutting FNMA stock requirements, should do the trick.

Some housing experts in Congress have expressed doubt that this will actually happen. What may happen, they say, is that the discount rate will simply be increased to make up the difference, requiring the buyer to pay more points.

Speeding distribution of federal highway funds simply means that the $724 million available for the April 1-July 1 quarter may be spent beginning immediately for those projects ripe for contracting.

Actually, there is some doubt among highway officials whether the order will have much impact between now and April 1. Few states have planned far enough in advance to have contracts ready for letting. In fact, President Eisenhower had already ordered similar speed-ups in the current fiscal year before he left office.

However, Commerce Secretary Luther Hodges sent telegrams to all state governors uring them to take advantage of the earlier availability of the funds. He asked them to "make every effort to encourage your highway construction agency to step up its highway program to the fullest extent possible as a result of the availability of these funds."

In defense spending, one area that seems certain to get an extra push is hardened bases for the intercontinental ballistic missiles. It is the Minuteman missile bases that will be pushed the hardest. Present plans call for the missile to be in service by mid-1962. This means that work on the estimated 1,000 underground silo launching sites must be completed reasonably close to this date.

First contract for Minuteman silos will be let in the next few weeks, for upwards of $50 million. All told, the construction of Minuteman underground silos will total $200 million or more in the next few years.

In addition, there is still some $800 million in Titan and Atlas bases still to be completed over the next two to three years. Base construction for ICBMs is an area where speed-ups can come almost directly in proportion to the amount of money the Administration wants to pump into them.

A tax package aimed at stimulating plant investment and offsetting the Treasury loss by closing some loopholes is also on the way this week or next. This presumably will mean a better break for businessmen amortizing new capital equipment, such as heavy construction machinery. The tax structure considered the most palatable to Congress is repeal of the 4% tax credit on dividends, put through by the Eisenhower Administration, and perhaps withholding taxes on dividends.

Mr. Kennedy has been very emphatic in his public statements about

JFK's Housing Prescription Only

President Kennedy's directive cutting the maximum allowable interest rate on home mortgages insured by the Federal Housing Administration drew only mild reaction from builders last week.

The announcement came while 30,000 builders were attending the annual convention of the National Association of Home Builders in Chicago's new McCormick Place exposition hall (see picture). It caused hardly a ripple.

The consensus: Cutting the maximum allowable interest rate of home mortgages by ¼%, to 5½%, isn't going to bring much change in the housing market. (Including the ½% insurance premium, the new total now will be 6%, compared to the previous 6¼%.)

Most builders, including E. J. Burke, Jr. of San Antonio, newly elected president of NAHB, consider the action a psychological help.

"I think it will be a stimulant to new-home buying," said Mr. Burke. "The cut, widely publicized, could be a solid indication to many potential homebuyers that money costs are lower, thereby encouraging many people to look around," was the reflection of a Connecticut builder.

But few expect the rate cut to qualify buyers today who yesterday could not qualify financially. "After all, it will reduce the monthly payments by only about 16 cents per $1,000 of mortgage, or a total of $1.60 a month on a $10,000 mortgage," said a spokesman for the Long Island Home Builders Institute.

And an Orlando, Fla., builder called attention to the facts of mortgage practice—discounting. "It will only mean a larger discount, which after all, the buyer of a new house pays for in a higher price."

In wide areas along the Eastern Seaboard and in some parts of the Midwest, the FHA 5.75% mortgage was available at par. Now, FHA mortgages at the new rate will command a two-point discount, perhaps slightly less, in those areas where par mortgages were available. In regions such as the West Coast, where par mortgages, even at 5.75%, are not available, the discount will be steeper. (When a mortgage is discounted, the borrower obtains less money than he contracted to borrow, but pays interest on the full amount and repays the full amount. Discounts raise the effective yield from the loan to the lender.)

On another Kennedy proposal—a Cabinet-level Department of Housing and Urban Affairs—NAHB seems to be in headlong retreat from the general approval it had first indicated as early as two years ago.

Some members of the NAHB board of directors favored omitting the subject entirely from this year's policy statement. But they were voted down.

NAHB's official statement, considerably softened, indicates clearly the organization's second thoughts about elevation to Cabinet status: "We are disturbed by indications that such a department, if formed, may—contrary to the original intent—actually diminish the importance of homebuilding and home finance by emphasizing in its structure and personnel, a wide range of other functions such as municipal financing, commuter transportation and highways. We favor a Cabinet department, but only one in which housing is given primary importance."

Although a number of builders indicated concern about the extent of government's involvement in housing, it was clearly apparent that the homebuilding business is more than ever dependent upon moves made in Washington at the executive and legislative levels.

Builders spoke of new markets, the organization spoke of new markets—but efforts to develop them appear for the most part to be based on government participation in one way or another.

Housing for the elderly is an example. The organization says the privately financed construction of such housing has been impeded by "failure in many FHA offices to recognize the growing importance of this program." NAHB therefore asked that the FHA field offices "be required to recognize that the provision of this housing is a new undertaking to which customary underwriting principles do not apply."

Urban renewal also needs some administrative changes if it is to be the success promised, the association says. "There must be more incentive to create the kind of private initiative, which will achieve a faster rate of progress for urban renewal and permit the participation of all builders," the policy statement declares.

The association also "endorses" federal and state aid to communities for construction of needed public facilities, "particularly sanitary sewage disposal, surface drainage and water supply," and asks that Congress also provide FHA insurance of loans for land development and improvement.

About business generally, many homebuilders appear more confused than optimistic or pessimistic.

Builders on Long Island, N. Y., feel more confident about the business prospects this year than they did four to five months ago. Miami and the west coast areas of Florida also note a pickup, not only in interest at the housing tracts but, more important, in sales.

New England, particularly Connecticut and Massachusetts, is also showing renewed strength. One Hartford builder reports dramatic results after switching to lower-priced houses. And he's not alone. Scores of builders said they were dropping down to the lowest priced bracket possible within the limitations of basic building and land costs in their areas.

The Hartford builder, who for years

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his hopes and intentions to retain a balanced budget. He told a press conference last week he will propose additional revenues to cover every additional spending item. But his language on the subject has been fairly obtuse in other instances. While expressing intent to balance the budget he quickly adds that "we will do what needs to be done," nevertheless. He insists that his programs will not "of and by themselves" unbalance the 1962 budget submitted by Mr. Eisenhower.

Kennedy aides acknowledge privately, however, that if his program is enacted in full it will inevitably mean a budget deficit unless the economic recovery is brighter than anticipated. The Eisenhower budget, for instance, proposes higher postal and gasoline tax rates. Experience shows Congress is unlikely to go along, and Kennedy is promising to keep these items in the budget.

Basically Mr. Kennedy and his top economic advisers believe that budgets should be balanced not by cutting expenditures but by increasing revenues through economic growth. He scores the growth rate of the past seven years, which he pegs at 2.5%, and says that even the potential annual growth based on current manpower and productivity is only 3.5%—which "is not high enough." Mr. Kennedy hopes that his broad policies of higher investment in human and physical resources will force a higher growth rate before the end of his first Administration. This is the shadow area of economics, of course. Hopes and theories can only be proved by events.

a Small Help, Homebuilders Say

CORPORATION OF AMERICA

Chicago's $35-million exposition hall, huge as it is, was packed by NAHB conventioneers.

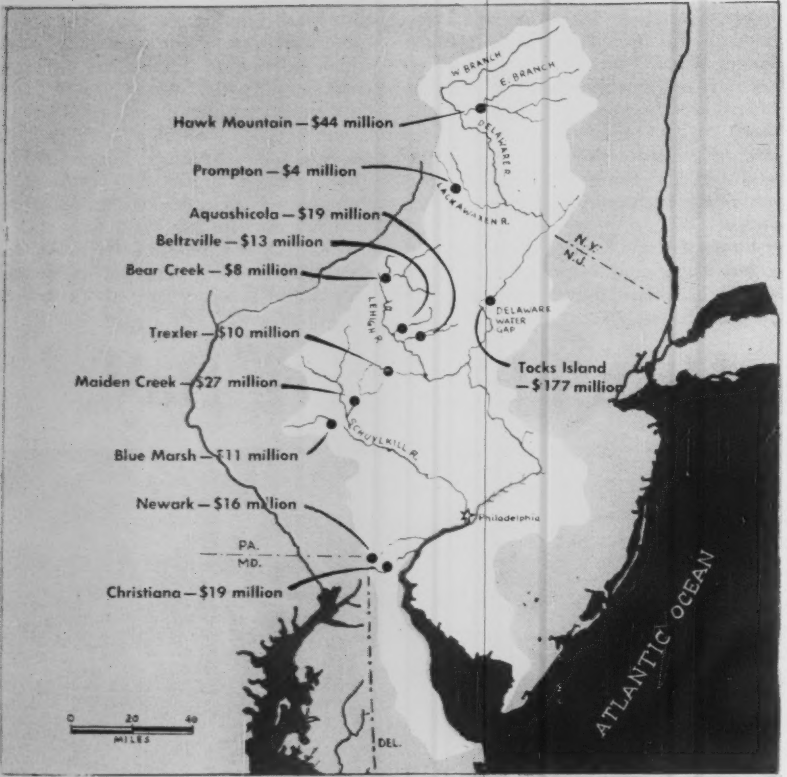
has operated in the $20,000 to $26,000 class, is now in the area of $15,000.

Builders from most areas report shifting price class by building a smaller house or omitting such things as paved driveways and built-in major appliances in the kitchen. Others provide a carport instead of a garage, or no carport if they once used it. "You'd be surprised how a $1,000 or $2,000 chop from previous prices will boost sales."

There is still the hope, however, that a longer amortization period for FHA-insured mortgages will be authorized. The present maximum period is 30 years; builders would like to see it extended to 35 or 40 years.

Such a change would require congressional action. To provide the advantages of a 35- or 40-year mortgage quickly, NAHB is proposing a change that could be accomplished within the administrative authority of FHA. NAHB urges the agency to provide a graduated schedule of repayments as follows: For the first five years of a 30-year mortgage, the owner would pay a monthly amount on principal and interest based on a 40-year mortgage; for the next five years, he would pay an amount based on a 35-year mortgage; and for the final twenty years, repay an amount based on a 20-year mortgage.

NAHB says the graduated schedule would help qualify many young homebuyers whose income may be insufficient to support the cost of home ownership. Smaller payments to interest and principal in the first five and 10 years of ownership will give the family time to build up the earning power that normally can be expected in later years.



Eleven dams come closer to starts as . . .

Governors Accept Delaware Pact

A proposed interstate construction and regulatory agency for water resources projects in the Delaware River Basin moved a significant step towards creation last week.

A draft compact among Delaware, New Jersey, New York, Pennsylvania and the U. S. government establishing the agency was approved by governors of the four states and a federal representative. The document now goes to Congress and the state legislatures for ratification.

The compact would create a five-man commission with the broad responsibility of developing and carrying out plans, policies and projects relating to the basin's water resources.

It would be empowered to finance, build and operate dams, reservoirs, hydro plants and other facilities necessary for its purposes.

It would also have the authority to establish standards of planning, design and operation for water and waste treatment plants, stream and lake recreational facilities, trunk water mains, local flood protection works, small watershed management program, ground water recharge and other projects and facilities in the basin affecting water resources of the area.

The agency would also be authorized to conduct and sponsor research, compile stream and ground water data, and publish information on the basin's water problems.

Projects and operations of the commission would be financed partly by the signatory parties and partly by other revenue of the agency. The commission would be authorized to borrow and issue bonds, repayable out of its own property and income. It would also be responsible for developing cost-sharing and reimbursement formulas for the signatory governments.

The agency would not have taxing power, but it would have the authority to assess water users and others benefiting to a measurable extent from stream regulation and storage.

The proposed compact requires the commission to develop and adopt a comprehensive plan for immediate and long-range development in the basin. Approval of the agreement probably will signal a start on a 50-year, $500-million construction program embodied in a plan under preparation by the Corps of Engineers' Philadelphia District for several years.

The Corps recommendations are based on an anticipated basin population of 40 million by the year 2010 and water withdrawals totaling 14 billion gallons a day. The plan calls for construction of 11 major reservoirs (see map) and 42 smaller flood-control reservoirs. Two projects, Tocks Island and Hawk Mountain, would include hydroelectric generation.

The compact would give the commission the last word in decisions on construction, operation or acquisition of any project, including those of the federal government, affecting the basin's water resources. The agreement expressly reserves for Congress, however, the traditional federal rights regarding navigable streams in the basin and also the right to modify the terms of the compact or withdraw altogether.

The commission would serve as a coordinating influence on the efforts of the 19 existing federal agencies and some 60 state agencies whose activities affect water resources of the basin.

The compact would run for 100 years, with provision for renewal. The terms were worked out by the Delaware River Basin Advisory Committee.

Airport Interests Ask $1.1 Billion in Construction

Three organizations of airport officials have called for a spending program of $1.1 billion over the next four years on airport construction. They plan to press their recommendation on both the Kennedy Administration and the new Congress.

The American Association of Airport Executives, the Airport Operators Council and the National Association of State Aviation Officials came up with the $1-billion-plus price tag after making a nationwide survey of airport needs.

The outlay is needed, they said, to meet the rapidly increasing demands of jet liners at metropolitan airports and of business aircraft and commercial planes serving small- and medium-size communities. The survey found that half of the 3,500 publicly owned airports in the nation are in need of expansion and improvement.

The federal share of the construction program would average $134 million annually over the four-year period. This would augment an estimated $588 million state and local communities would be expected to raise on a 50-50 matching basis.

The three organizations will specifically request an extension and expansion of the federal Airport Act of 1946 to provide additional federal funds. The present law expires June 30.

It has provided $63 million in federal aid during the past several years. In the final budget he submitted to Congress last month, President Eisenhower proposed cutting this to $40 million in the fiscal year starting July 1.

Asphalt Men Meet

NBCA convention stresses quality control, research

Materials, machines, quality control and research held the spotlight at the 6th annual convention of the National Bituminous Concrete Association in Houston, Tex., last week.

NBCA expects to spend about $230,000 this year on its quality improvement program and operation of its research headquarters office Texas A&M College. The five-year $1.3-million research program, announced at last year's meeting in Detroit (ENR Feb. 11, 1960, p. 28), is supported on a voluntary basis by bituminous concrete producers, contractors and equipment manufacturers as well as refiners and marketers of asphalt.

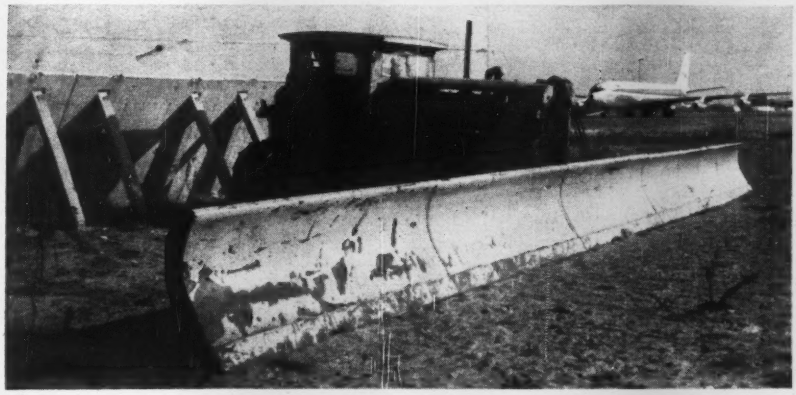
In moderating a panel discussion devoted to increasing production, economy and quality of bituminous concrete, H. A. Radzikowski, chief of the Division of Development, Bureau of Public Roads, said construction specifications should take full advantage of the production potential of new and improved equipment. As the speed of bituminous pavers increases, material production and all related construction activities should be geared to match the faster tempo.

Four panel members representing manufacturers of asphalt plants reported on improvements in bituminous concrete production—in stockpiling and feeding, drying, screening and proportioning materials.

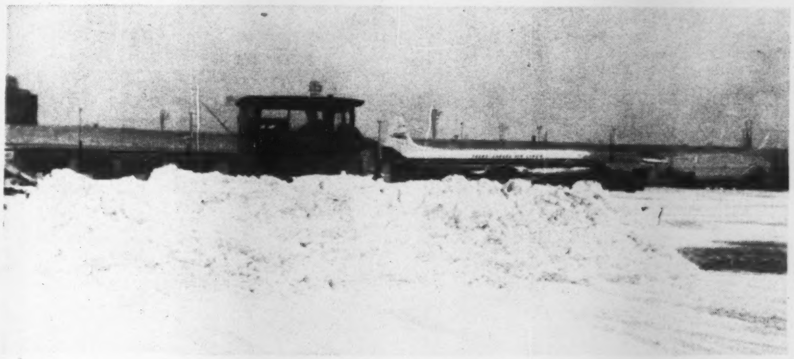
Improvements on some machines include automatic controls to insure smooth riding pavement and properly matched longitudinal joints. Tires are designed for more flotation and increased traction. Paving and travel speeds are stepped up, and more operations are being performed hydraulically. Some crawler models are engineered for fast over-the-road towing. Hydraulic power steering with finger-tip controls to reduce operator fatigue are featured on some machines, while others are designed for better maneuverability, ease of maintenance, high capacity production and increased automation.

The Asphalt Institute's research efforts on the design of mixes were described by John M. Griffith, director of research and development. They deal with mineral fillers for asphalt pavements and the stabilization of fine grained soils with asphalt. There are indications, he said, that relatively small amounts of certain mineral fillers will substantially improve the loadbearing characteristics of asphalt pavements.

F. C. Leffingwell, president of the Asphalt Paving Co., Miami, was elected NBCA president for 1961.



Dozer With 45-Ft-Wide Blade . . .



. . . Pushes 40 Cu Yd of Snow

When the heaviest snowfall in 13 years closed down New York International Airport last weekend, it wasn't for lack of snow-removal equipment. Among the units in use at the airport are three 45-ft-wide bulldozer blades—probably the widest in captivity.

They are assisted by six small brothers—blades a mere 36 ft wide—an even smaller sister, 32 ft wide, and an infant with an insignificant 12-ft width.

The 36- and 45-ft blades are handled by Caterpillar D-8 tractors, the 32-ft by a D-7 and the 12-ft by a D-4. **Side by side the 11 machines make a snow shovel 395 ft wide.**

The rigs are used at hangar and parking areas of five airlines and on areas that are adjacent to the passenger arrival buildings.

The blades were the brain storm of Edwin Duryea of the R&D Construction Co., Roosevelt, L. I. The company began snow removal at the airport three years ago using trucks with 11-ft blades. The trucks were fast but the blades were slow.

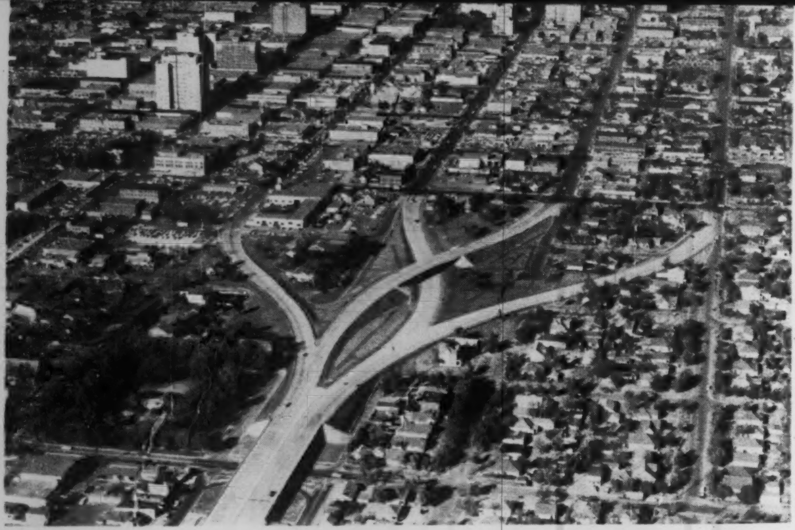
Mr. Duryea rounded up four 8-ft-wide bulldozer blades built for the front end of Austin-Western motor graders. These particular blades are light and have sideplates with matched bolt holes. Bolting the blades together simplified alignment for subsequent welding of the joints.

The prototype was (and still is) mounted on a D-7 with a cable lift. A pipe frame running from the blade ends to the front of the rig braces the blade ends, and two dollies with 6-in.-dia solid rubber tires are mounted just behind the blade to keep the cutting edge from digging into the pavement during plowing operations. Other blades are similarly assembled.

The wide blades have two weaknesses—they can't be turned or lifted when they have a load on them. Mr. Duryea solved the first of these problems by lining up his work so that he can push snow in a straight line to a disposal or stockpile area. To lift his blades, he simply backs the machines up from under the load.

The rigs start plowing operations before a snowfall is ½ in. deep, yet at the end of a single pass, the 36-in.-high blades often have 6 ft of snow rolling ahead of them. Duryea estimates that the widest of his blades can push as much as 40 cu yd of snow at one time.

For traction, the machines all have conventional Caterpillar tracks with grousers. But for pavement protection, badly worn grousers are superior to new ones.



Expressway Feeds City Streets

An unusual four-street dispersion system resulted from a compromise by the Texas State Highway Department and the City of Amarillo to avoid the large cost of carrying an expressway through the city's business district.

The octopus-like tentacles are a part of the recently completed Amarillo-Canyon Expressway, which carries traffic to and from the south side of the city. A similar system on Amarillo's north side will serve a continuation of the expressway toward Dumas. The north portion is scheduled for completion in 1962.

Because of the flat topography of the area, drainage was a major problem in the urban section. First contract on the project was for a 1¾-mile concrete outfall sewer, cast monolithically and placed on an average of 30 ft deep. The sewer was designed as the equivalent of a 102-in. circular pipe.

Within the city limits, 10 steel I-beam structures have been built to provide for cross-traffic and interchanges. Two overpasses will be built and two others rehabilitated to provide grade separations between two railroads and the traffic on the four-street grid system.

Byron Reese, expressway engineer, Texas Highway Department, is in overall charge of the work. Principal contractors have been Gilvin-Terrill, Inc. and Ivan Dement, Inc., of Amarillo, and Austin Road Co. and Flenniken Construction Co. of Dallas.

Decline in Engineering Freshmen

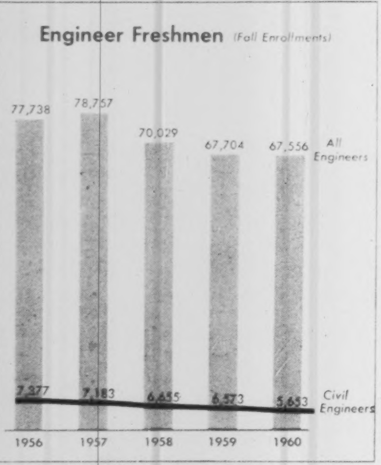
The U. S. Office of Education notes a continuing decline in the number of college freshmen enrolling in courses leading to an engineering degree The decline was most drastic in civil engineering courses.

New engineering students who registered last fall in undergraduate schools totaled 67,600, a drop of about 100 from registrants a year earlier. First-year civil engineering students dropped to 5,653 last fall from the 6,573 who registered in September of 1959.

Total undergraduate enrollment in engineering for all four years also declined by about similar percentages. Of the 234,000 undergraduate enrollments this term, nearly 25,000 were civils.

In contrast, enrollments in graduate engineering schools have increased in recent years. Registrations for the master's degree rose to 31,200 in the fall of 1960 from the 29,700 a year earlier. Comparable CE enrollees were 3,183 last fall and 3,076 in the fall of 1959.

Enrollments for doctorates rose from 5,600 in the fall of 1959 to 6,400 in the fall of 1960. The comparable enrollments in civil engineering were 508 in the fall of 1959 and 636 last fall.



CIVIL ENGINEERS follow the trend.

Bid of $12.6 Million Is Low on N. Y. Stadium

Low bid of $12.6 million for the general construction contract for New York City's National League baseball club (ENR May 5, 1960, p. 25) was submitted jointly last week by P. J. Carlin Construction Co. and Thomas Crimmins Contracting Co., Inc. of New York City.

This contract includes construction of a 55,000-seat stadium, an additional 5,000 temporary bleacher seats for football, and a pedestrian overpass connecting with a city subway. Two sections of rolling stands, each of 5,000-seat capacity, will flank the first and third base lines. They will roll into parallel alignment for football.

Estimated total cost of $17.8 million included low bids for electrical, heating and ventilating, plumbing, and elevators and moving stairs. It also included the engineering costs.

Despite a $1.6-million excess over the preliminary total-cost estimate of $16.2 million, the New York State Legislature and the City Council are expected to approve construction.

Praeger, Kavanagh & Waterbury of New York City are architect-engineers.

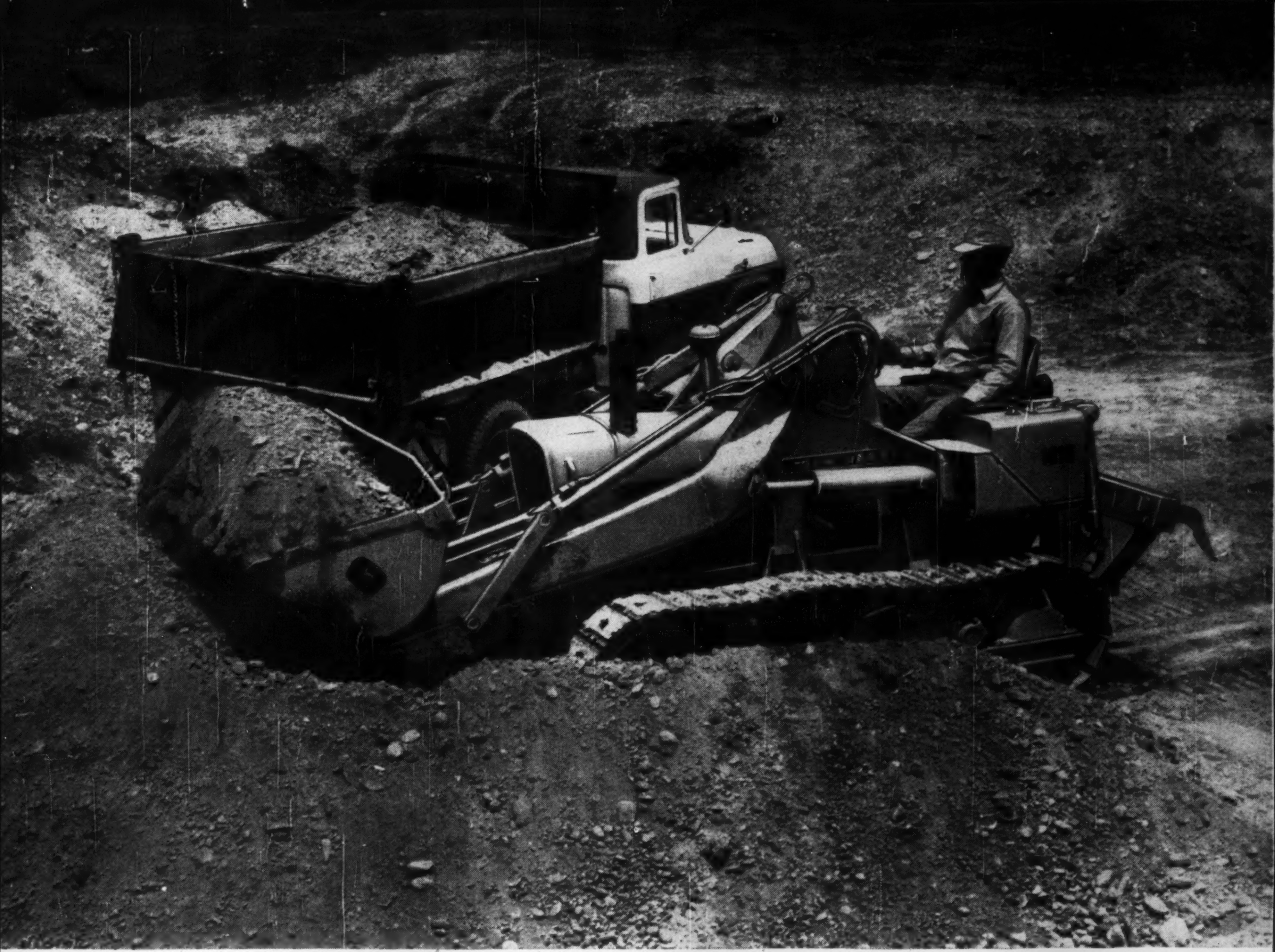
Delaware Highway Engineer Reinstated; Then Resigns

A rapid-fire series of events in Delaware has been climaxed by the resignation of Richard A. Haber as chief engineer of the state highway department, effective April 1. Mr. Haber had been reinstated to full status by the highway commission a few days before.

Mr. Haber had been bucked out of office before Christmas by a report from the state attorney general accusing highway department personnel of "actual commission of crimes, illegal spending of public money, and general moral laxity" (ENR Jan. 5, p. 26).

But a special committee of the highway commission cleared Mr. Haber completely, stating that "the special committee has been informed by the attorney general that he has not charged Mr. Haber with the commission of any crime, but has merely called attention to conditions or practices in the department which, in his opinion, required improvement." The committee added, "Many of the practices and conditions mentioned in the attorney general's report have existed in the department for many years under both Republican and Democratic administrations."

Referring to the investigation, Mr. Haber said: "After 20 years' service I feel a little bitter about the methods and procedures under which the questioning was conducted. After this experience, I am not inclined to continue in public service."



New four-cylinder power speeds loading with John Deere TEN-TEN

Now, with 40 engine horsepower—the greatest work capacity ever offered in a compact John Deere Crawler—the new Ten-Ten Crawler provides all the benefits of smooth-handling 4-cylinder, 4-cycle design. New John Deere gasoline and Diesel engines provide wide-range performance—operating efficiently through the full throttle range. For top operator efficiency, an optional new hydraulic direction reverser with wet clutch eliminates shifting and clutching while loading—speeds cycle time.

A single operating lever controls all movements of loader lift arms and bucket. Self-leveling 3/4-yard bucket has a roll-back of 40 degrees, developing 8500 pounds breakout. Full-height lift capacity is 4000 pounds, and dump clearance tops 8 feet.

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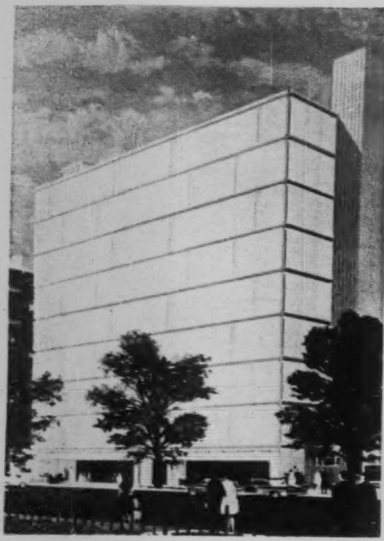


Windowless Building Best For Research Projects

Temple University has awarded a $3.6-million general contract for construction of a windowless, nine-story Medical Research Building to L. F. Driscoll Co. of Philadelphia.

Philadelphia architects Nolen & Swinburne decided on windowless walls after preliminary study revealed the handicaps that windows often imposed on researchers. On a tour of various research centers, they discovered that the researchers often covered windows with racks and instrument banks. And natural light sometimes interfered with the interior lighting required for experiments.

The windowless design will also provide greater flexibility in room layout and better atmospheric control. The 4-ft modular design, with movable partitions, enables scientists to change any room size in multiples of 4 to 44 ft. In plan, the building will be 100x126 ft. Two mechanical towers housing elevators, stairs and mechanical rooms will be centered on the two end walls. A third mechanical core, housing the exhaust ventilating system, will run parallel to the end-wall towers, spanning the short dimension of the building at its center.

Cast-in-place concrete bearing walls, 10 in. thick, will form the cells of these mechanical shafts. They will support prestressed concrete channel slabs spanning 50 ft between them.

Precast concrete panels will enclose the long sides of the building and the ends, except for the mechanical towers, which will be faced with brick.

The wall panels will be bolted to the concrete spandrels with clip angles bolted to slotted insert anchors.

Structural engineer is Severud-Elstad-Krueger Associates of New York City.

Collapse Probe Brings Indictments

A grand jury investigating the construction collapse of Newark's underground Military Park garage (ENR Mar. 7, 1960, p. 23) has indicted the concrete supplier, two of its employees and three men associated with a testing laboratory for conspiracy to cheat and defraud the public.

The indictment charges that the five men conspired to furnish concrete that neither satisfied design mix proportions nor contained Type III (high early strength) cement, as specified.

Sections of two floors collapsed last March as workmen were placing concrete for the 18-in.-thick roof slab of the three-story underground structure. Fresh concrete falling from the roof carried with it the hardened concrete of the first floor below grade.

Twenty workmen on the deck scrambled to safety only seconds before the collapse occurred.

Three other indictments charge the concrete supplier with obtaining and attempting to obtain payments under false pretenses. Purchaser of the concrete was Terminal Construction Corp. of Wood-Ridge, N. J.

Indicted by the Essex County grand jury on the conspiracy charge are Francis X. Keegan, president of Newark Testing Laboratory and Michael D. Sprague, president of John P. Callaghan Co., of Harrison, N. J. Also indicted were two Newark Laboratory employees, a Callaghan Co. employee and the Callaghan Co. as a corporation.

The testing laboratory was retained by the owner, the Newark Parking Authority.

Construction of the garage was resumed last July after a delay of nearly four months. Concreting operations are nearly complete.

During the four-month delay following the collapse, load tests were conducted in floor areas where laboratory core tests indicated substandard concrete. All slabs tested satisfactorily. Since the circular spiral columns could not be cored for test specimens, all columns cast before the collapse were strengthened with cylindrical steel jackets as a precautionary measure. Welders butt-welded two half cylinders, and then workmen pumped expanding grout into the 2-in. space between column and jacket.

Last July Terminal Construction Corp. filed a $6.3-million damage suit against the Callaghan Co. and Mr. Keegan, trading as Newark Testing Laboratory.

Around the World . . .

• **Brown budgets Oroville**—California Gov. Edmund G. Brown's proposed budget recommends allocation of nearly $19 million for a start on 730-ft-high Oroville Dam and $3.6 million for a start on San Luis Dam and Reservoir. The two projects, with price tags of $445 million and $290 million respectively, will eventually be financed with proceeds of the $1.75-billion bond issue approved last November.

• **Subway for Montreal?**—A subcommittee of the Montreal Metropolitan Corp. has reported that a 14.7-mile, $306-million subway is the only solution to the Canadian city's growing transportation problem. The proposal followed in general lines one submitted eight years ago by the Montreal Transportation Commission.

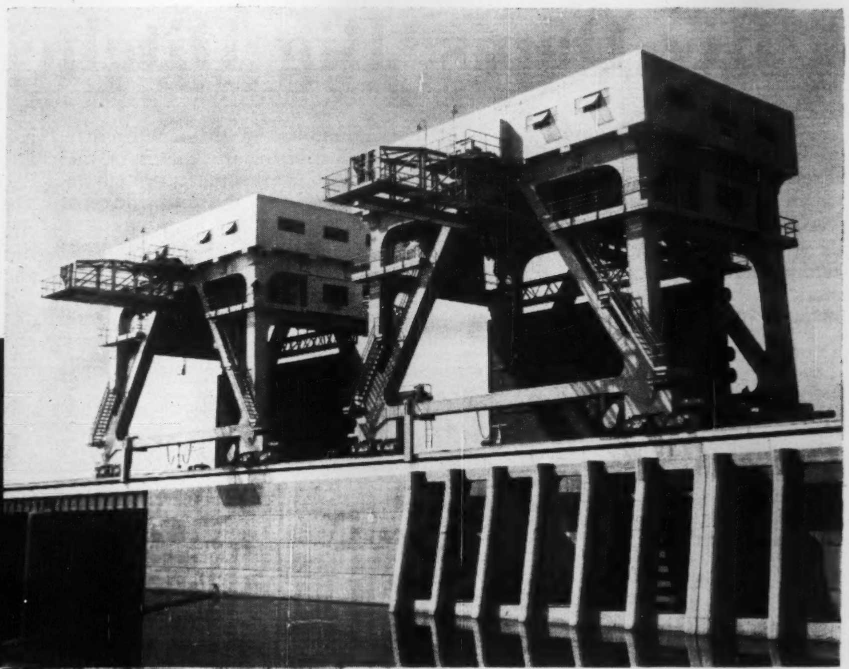
• **Have city, need plans**—Boston is looking for 50 city planners to carry out its $90-million urban renewal program. Edward J. Logue, chief of the Boston Redevelopment Authority, is hiring at salaries ranging from $4,500 to $9,500.

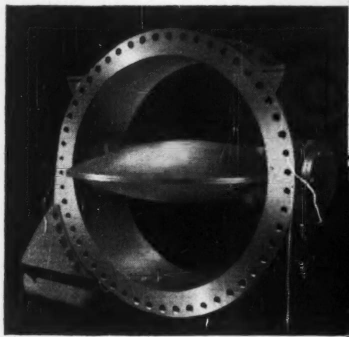
• **Water pollution**—Two Canadian technical societies, the Engineering Institute of Canada and the Canadian Institute on Sewage and Sanitation, have formed a joint 16-man committee to study all fragmentary water-pollution control work and collect information on water-conservation methods. They aim to unify the battle against water pollution and to determine if a national water-use and water-research program is needed.

• **Homing instinct**—Florida's Gov. Farris Bryant predicted that work would begin before July 1 to extend the Florida Turnpike north beyond its present Fort Pierce terminus. He said he didn't know yet how far it would go, but initial expansion would at least reach into Marion County, his home county.

• **Old Dominion togetherness**—Five Virginia cities and three counties will co-operate to develop a regional master plan of highways and streets. Norfolk, Portsmouth, South Norfolk, Virginia Beach and Suffolk will join with Norfolk, Nansemond and Princess Anne counties to finance it.

HEAVY ENGINEERED EQUIPMENT





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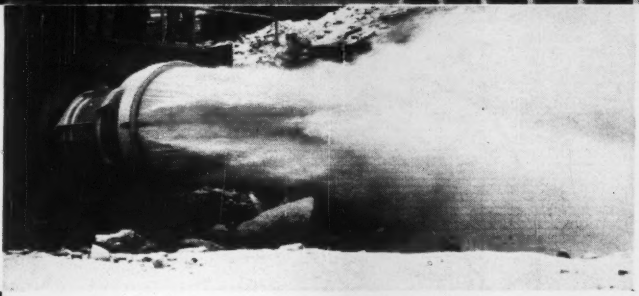

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Big Dams, Big Ditches and Wells

By Waldo G. Bowman

From Karachi to Kyber Pass, Pakistan is alive with foreign consulting engineers readying plans that in due course will generate an influx of foreign contractors. Some of these firms will be American.

They will be part of an army of experts summoned by this new country to aid it in utilizing the waters of the Indus River and its tributaries, and in otherwise improving the national economy.

Already the wheels of progress have begun to turn. A group of eight contracting combines, including a number of U. S. firms, has been prequalified to bid for the construction of Mangla Dam, first project in the great Indus Basin Treaty program (box opposite). Mangla Dam will include a 75-million-cu-yd earth and rockfill, designed by Binnie, Deacon & Gourley of London, and a tremendous concrete spillway of 1,200,000 cu ft per sec (cfs) capacity, designed by Harza Engineering Co. of Chicago. The Water and Power Development Authority (WAPDA) of West Pakistan plans to call for bids early this spring.

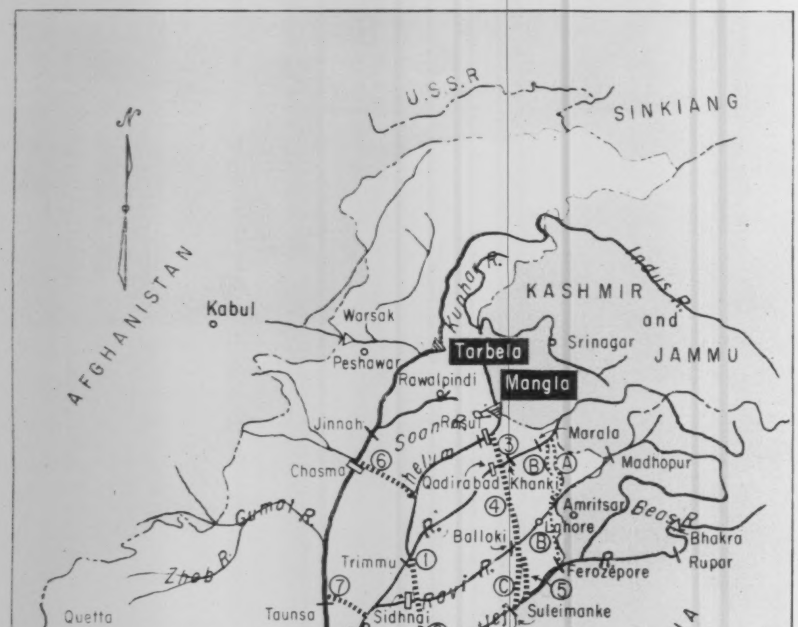
Last month WAPDA, through the consulting firm of Tipton and Kalmbach of Denver, issued a public invitation to contractors interested in the second Treaty project, a 44-mile, 11,000-cfs canal, to submit their qualifications (see advertisement in ENR Jan. 5, p. 69). According to the schedule, bids will be asked for in April.

This canal is the first of a series that will reach an aggregate length of 388 miles and require 344 million cu yd of excavation.

And soon a third project will be brought a step nearer the design stage when Tippetts-Abbett-McCarthy-Stratton International, consulting engineers of New York, submits to WAPDA the results of a year-long appraisal study for Tarbela Dam on the Indus River. Tarbela, an earth and rock fill, could well turn out to be the world's largest dam. One possibility is for a dam with a volume of 130 million cu yd. And Tarbela's spillway may have to have the unbelievable capacity of 2 million cfs to handle the Indus River floods.

With the billion dollars worth of dams and canals to be provided by this Treaty program—at very little cost to Pakistan—one would expect WAPDA to be pleased with the prospects. It is and it isn't. There is no lack of gratitude to the seven nations—the U. S., Canada, Great Britain, West Germany, India, Australia and New Zealand—and the World Bank, which are financing the program by contributions and loans. But, as WAPDA officials point out, all of this construction is merely for the purpose of replacing something Pakistan already has—the water in its rivers that the Treaty allots to India.

The Treaty construction, it is feared, may even postpone some of the country's five-year goals by requiring sizable extra expenditures on Pakistan's part.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Trimmu
Ravi R.
Ferozepore
Quetta
Taunsa
Sidhnai
Suleimanke
Multan
Sutlej
INDIA
Chenab
Mailsi
Islam
Panjnad
WEST PAKISTAN
Indus R.
Gudu
Sukkur
Hyderabad
Kotri
Karachi
Arabian Sea
LEGEND
▽ Existing dams
▲ Planned dams
— Existing barrages
▭ Planned barrages
Link Canals
Remodeled
Ⓐ Marala-Ravi
Ⓑ Marala-Ferozepore
Ⓒ Balloki-Suleimanke I
New
① Trimmu-Sidhnai
② Sidhnai-Mailsi
③ Rasul-Qadirabad
④ Qadirabad-Balloki
⑤ Balloki-Suleimanke II
⑥ Chasma-Jhelum
⑦ Taunsa-Chenab
50 0 50 100
Scale of miles

INDUS RIVER SYSTEM IN PAKISTAN, already equipped with irrigation diversion barrages, is to be further developed by storage dams and large link canals.

This is article V in a series of reports by ***ENR Editor Waldo G. Bowman*** *on construction activity in Asia and the Middle East.*

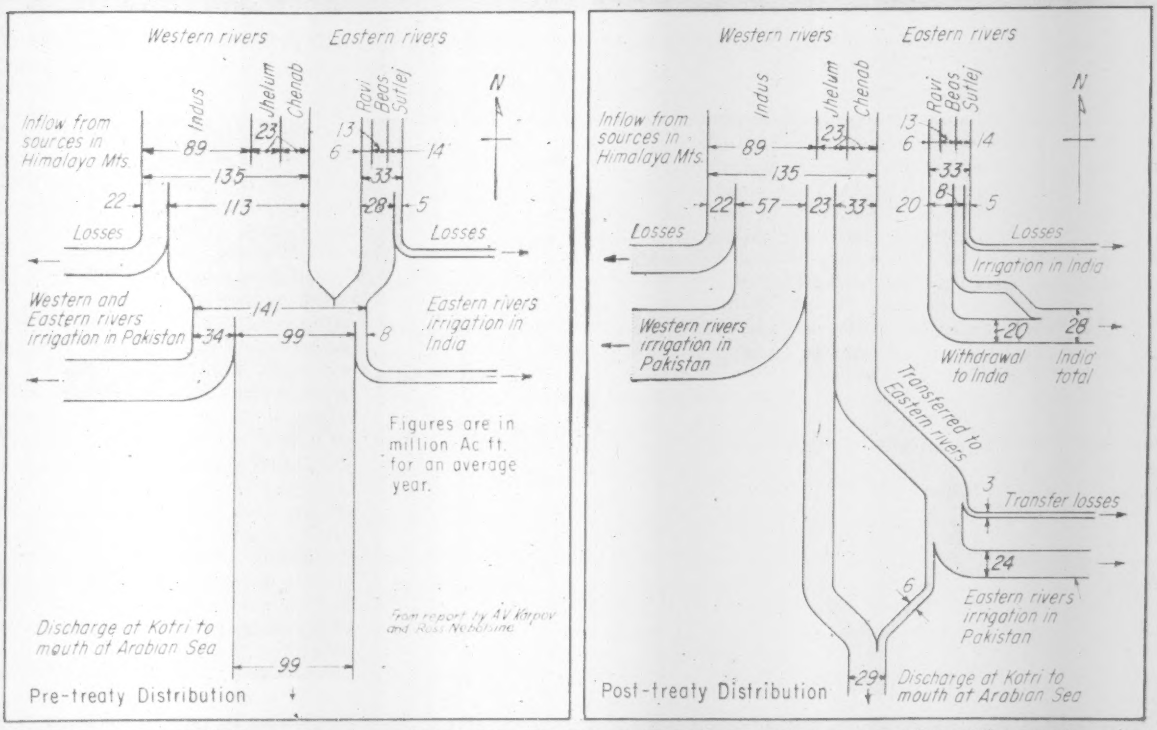
Point Way to Pakistan's Growth

The Treaty facilities will assure that Pakistanis will not die of thirst and starvation for lack of water, but they will contribute little or nothing to Pakistan's needs for growth and development.

It is these growth needs that WAPDA cannot afford to forget, even while it focuses on the necessary Treaty facilities. And it is these needs that are sparking the planning and construction of extensive facilities that have nothing to do with the great Treaty construction program.

• Tubewells of great importance—Of most current impact is a project to construct 2,000 tubewells in an area north of Lahore where waterlogging and soil salinity, truly Pakistan's No. 1 problem, has removed 1.5 million acres of land from cultivation. Over 1,000 of these wells have been sunk to depths of 350 to 400 ft. The first wells to be equipped with their vertical turbine pumps and electric motors were placed in operation in November. The U.S. Develop-

The Indus Basin Water Treaty—What It Is and Why


Western rivers
Eastern rivers
Indus
Jhelum
Chenab
Ravi
Beas
Sutlej
N
Inflow from sources in Himalaya Mts.
89
23
13
6
14
135
33
22
113
28
5
Losses
Losses
Western and Eastern rivers irrigation in Pakistan
141
34
99
8
Eastern rivers irrigation in India
Figures are in million Ac ft. for an average year.
From report by A.V. Karpov and Ross Nebolsine
Discharge at Kotri to mouth at Arabian Sea
99
Pre-treaty Distribution
Western rivers
Eastern rivers
Indus
Jhelum
Chenab
Ravi
Beas
Sutlej
N
Inflow from sources in Himalaya Mts.
89
23
13
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14
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22
57
23
33
20
8
5
Losses
Losses
Irrigation in India
Western rivers irrigation in Pakistan
20
28
Withdrawal to India
India total
Transferred to Eastern rivers
3
Transfer losses
24
6
Eastern rivers irrigation in Pakistan
29
Discharge at Kotri to mouth at Arabian Sea
Post-treaty Distribution

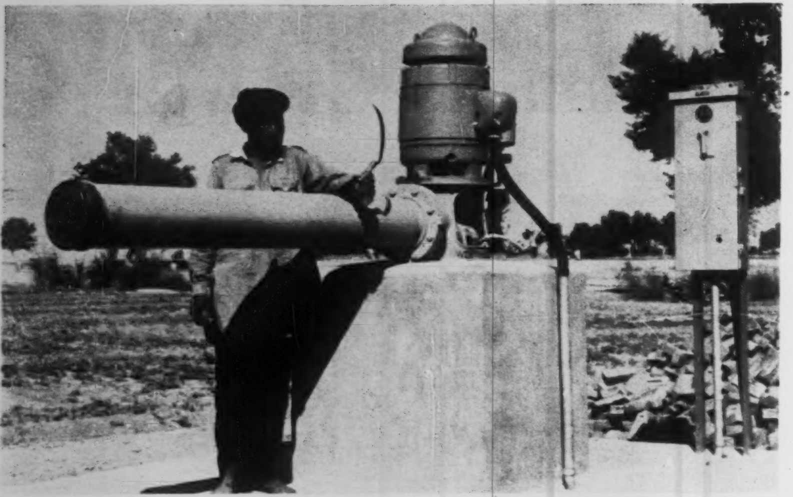
When India and Pakistan, in a great religious upheaval in 1947, divided their great Asian peninsula into two separate countries, the border cut right across the Indus River system, a vital lifeline for both of them.

India, being upstream, had an advantage, and threatened to use it by stopping streamflow with such structures as her huge Bhakra Dam. Pakistan reacted violently, since the lives of 10 million of its citizens depended on the water that India threatened to appropriate.

Thus was born the great Indus Basin dispute, which was resolved by the Indus Basin Water Treaty, signed last fall after eight years of negotiations guided and arbitrated by engineers and officials of the World Bank (ENR Sept. 22, 1960, p. 43).

As worked out by the World Bank, the treaty divides the waters of the Indus and its five east bank tributaries between the two countries. India is allocated all of the water originating in the three easternmost streams, the Ravi, Beas and Sutlej; Pakistan gets the water of the three western streams, the Indus, Jhelum and Chenab. The water that India takes from the three eastern streams will be replaced by water transferred from the three western streams, whose supplies are adequate for this purpose.

It is this water transfer requirement, by far the largest in history, that has given rise to the tremendous construction program that will get under way this year. The principal elements are two huge storage dams—Mangla on the Jhelum and Tarbela on the Indus—and a series of canals to carry their stored water across country to the irrigation systems now fed by the Ravi, Beas and Sutlej rivers. These link canals, varying from 11,000 to 22,000 cfs in capacity, will have an aggregate length of 388 miles and will transfer an annual volume of 14 million acre ft to irrigate about five million acres of land. Other facilities provided for by the treaty include a large hydro power plant at Mangla Dam and a 2,500-tubewell project to correct waterlogging and salinity in a 2.5-million-acre area that is rapidly deteriorating.



TUBEWELLS numbering in the thousands will reclaim waterlogged land by lowering the water table, and also provide additional irrigation water.

ment Loan Fund has provided $15 million of the $30 million cost of the work.

According to the schedule of the consulting engineers, Tipton and Kahnbach, and the contractor, Harold T. Smith International, all of the 2,000 wells will be operating by the end of this year. With a total discharge capacity of about 7,000 cfs, their pumps are counted on to lower the water table and thus reduce waterlogging, while at the same time doubling the amount of irrigation water previously available in this area.

Although the pumped water will be somewhat saline, it will be mixed with sweet water from existing canals in the irrigation process. Drainage canals, to be built later, will carry the salty water into the rivers for further dilution.

• **Projects for growth**—Apart from the Treaty program, WAPDA has other power and irrigation projects either recently completed, under way or ready to start. Of incalculable value to this power-short country are three power plants completed last year.

The first two of these are 135,000-kw steam stations fired by gas from Pakistan's one and only gas field, which was discovered north of Hyderabad in 1953. Multan steam station, the first of the two completed, doubled the country's power capacity. It was built by Montecatini of Italy. The second station is located in Karachi.

The third facility is Warsak Dam, Pakistan's first hydro plant. Warsak is a concrete gravity structure 270 ft high and 700 ft long located on the Kabul River, 20 miles northwest of Peshawar. Canada contributed $36 million to its cost under the Colombo Plan. It was designed by H. G. Acres & Co. Ltd. of Niagara Falls, Canada, and built by Angus Robertson Ltd. of Montreal.

In addition to power, Warsak Dam supplies irrigation water to about 100,000 acres of arid land at the mouth of Kyber Pass. The damsite could have accommodated a higher structure, but this was ruled out because the resulting reservoir would have extended across the border into Afghanistan.

Three other steam plans are in the program. A 20,000-kw station was completed at Hyderabad by Morrison-Knudsen International, and a 30,000-kw station at Sukkur is being designed by H. G. Acres & Co. Both use natural gas. The third station, of 15,000-kw capacity, is being planned for Quetta in Baluchistan province by the Kuljian Corp. of Philadelphia. It will operate on local coal.

To round out the power program, small hydro stations are being established on some of the country's large irrigation canals. Two were virtually completed in 1960—a 13,500-kw plant on the Upper Jhelum Canal by H. G. Acres & Co., and one of 13,800-kw capacity on the Upper Chenab Canal by Energoprojekt of Yugoslavia. Some of the power from both will be used to operate the tubewells, which are in the same area.

With the completion of these new steam and hydro stations, the country's generating capacity will reach 425,000 kw, seven times what it was when Pakistan became independent from India 13 years ago. The plan is to more than double the present capacity in the next five to seven years, partly by increasing the size of the existing steam stations, partly by new hydro plants, including one at Mangla Dam.

• **More for irrigation**—Power, however, is not the only, or indeed the principal, growth objective. The main objective must continue to be water for irrigation in a country that is predominantly agricultural. One project expected to be completed this year is Rawal Dam, a masonry structure 80 ft high and 820 ft long. Although Rawal will supply water for irrigating about 100,000 acres, its main function is to furnish 22 million gallons per day (mgd) of domestic water to the nation's new capital city, which is under construction near Rawalpindi.

Topping the list of irrigation facilities, however, is Gudu Barrage on the Indus. Gudu is a 4,445-ft-long gated masonry structure that can discharge a flood of 1,200,000 cfs. It will provide weir-controlled irrigation to 2.5 million acres.

Gudu will be the fifth such barrage on the Indus, taking its place beside Sukker Barrage, completed in the Thirties, Jinnah in 1944, Kotri in 1956 and Taunsa in 1958. All of these earlier barrages were either built or planned by the British, but Gudu is strictly a Pakistani project.

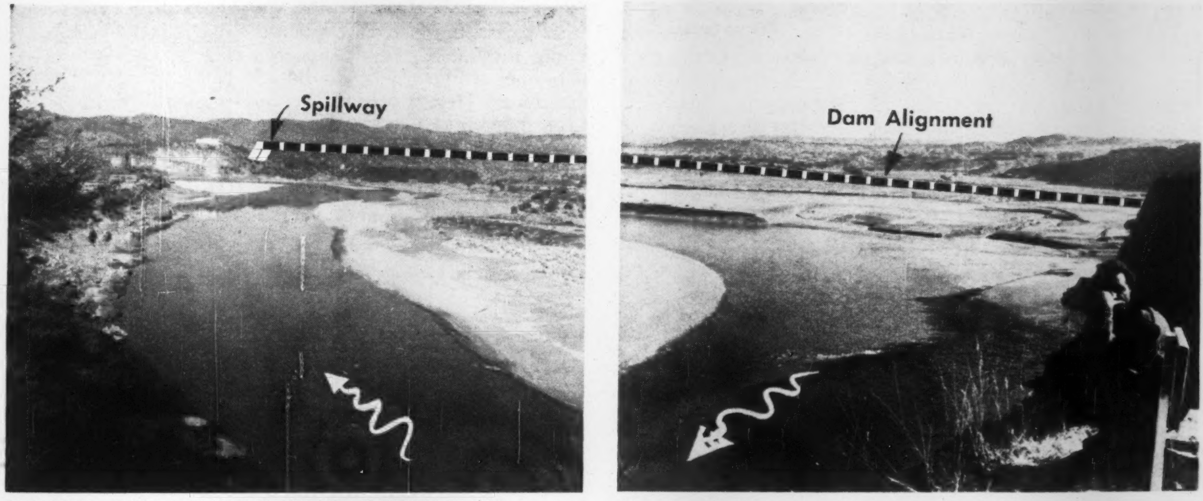
One of the principal construction difficulties at Gudu stems from the fact that it is located in a region where the meander belt of the Indus is nine miles wide. The river had to be pinned down near the construction site by dikes so that it could readily be diverted. Another difficulty was presented by the foundation dewatering, which had to be done by a series of deep tubewells. The project is expected to be completed in 1962, after an expenditure of $30 million on the barrage and $40 million on the main feeder canals. A loan of $15 million from the U.S. Development Loan Fund is providing the bulk of the foreign exchange requirements.

• **New projects needed**—All of these projects merely keep Pakistan's growth requirements from skyrocketing out of control. The country must still plan for development above and beyond these projects and the ones in the Treaty settlement program.

WAPDA is therefore investigating some 80 prospective damsites. In charge is its top coordinating consultant, Harza Engineering Co. Three rivers are being given a particularly careful look.

The Kunhar, northernmost tributary of the Jhelum up near the Kashmir border, is being studied by Chas. T. Main, Inc. of Boston. The Indus tributaries in the region around Rawalpindi are being investigated by Associated Consulting Engineers, a Pakistani firm. And the Zhob-Gomal rivers, west of the Indus and north of the Taunsa barrage, are being studied by the Yugoslav firm, Energoprojekt.

Other consultants are carrying on studies relating to irrigation, land reclamation and power in other areas—west of the Indus but farther south, as well as along the river in the area commanded by the Sukker, Gudu and Kotri barrages. Among these consultants are



MANGLA DAM WILL BLOCK THE JHELUM at this site (even wider than the two unmatched views show) with a 75-million-cu-yd fill. The spillway on the right abutment will have a capacity of 1.2 million cfs.

Sir Malcolm MacDonald & Partners, Lewis Lane & Co., and Hunting Technical Services, all of Great Britain.

To button up all of this into a planning package, Harza has delivered to WAPDA a comprehensive report assessing the country's development potential over the next quarter century. It covers geography and climate; hydrology (groundwater and streamflow, floods, water tables and water quality); soils; geology; present and potential agriculture and irrigation; present and future water demand; water control; power; water projects; Indus Basin master plan; economics; engineering programs; and organization and project execution. Out of this is expected to come a more orderly program than the country has yet been able to mount.

• Mechanized construction coming—As a final bit of forward planning—looking to a modernization of construction practices—WAPDA has hired Morrison-Knudsen International to teach its forces how to use and maintain heavy construction equipment. M-K operates as a consultant to the Machinery Pool Organization, which owns large amounts of equipment being used all over West Pakistan.

The objective is to improve the efficiency and output of individual pieces of equipment, to standardize and enforce field maintenance practices, to scrap old equipment, to develop a practical purchasing plan for new equipment and to build up an adequate inventory of spare parts. In addition to working with the organization in Pakistan, M-K is sending small groups of Pakistanis to its training school in Boise, Idaho.

An additional interesting sidelight on how M-K and the Machinery Pool Organization are promoting mechanized construction lies in their being chosen to finish up lagging work on irrigation and drainage channels on the Kotri Barrage project. Within four months they excavated 42 miles of drains with machines, thus effecting a reduction in waterlogging of the soil many months before it could have been accomplished if the excavation had been continued with hand labor. Currently, the Machinery Pool Organization is also taking over all of the heavy equipment used on Warsak Dam, overhauling it and renting it out to various other government jobs.

• Treaty program of top interest—Regardless of the importance of the various "growth" projects to Pakistan, of primary interest to the rest of the world is the huge water transfer construction program drawn up as a result of the Indus Basin Water Treaty. It could hardly be otherwise considering the volumes of everything imaginable that are involved—a billion dollars, and probably more, of money, 200 million cu yd of fill in two dams, 1 to 2 million cu ft per sec of water to be handled by the dam spillways, and nearly 1 million cu yd of excavation per mile in 388 miles of canals.

In addition, all of the facilities—dams, spillways and canals—will be built under contracts to be awarded in a world-wide competition. All of these facilities contain features of such commanding technical importance that they are worthy of detailed description.

• Mangla Dam—Storage dams in Pakistan were foreseen as vital to Indus Basin development. Therefore designs for Mangla Dam on the Jhelum River were begun several years before the Treaty was signed, and even before

The Eight Approved Bidders for Mangla Dam

1. Western Contracting Corp., Raymond International (U.K.) Construction Ltd.; Entreprises Campenon Bernard.
2. Peter Kiewit Sons Co., Oman-Farnsworth-Wright.
3. Guy F. Atkinson Co.
4. Utah Construction & Mining Co., Brown & Root, Inc., Taylor Woodrow (Overseas) Limited, Compagnie Industrielle de Travaux, Establishments Billiard, Societe Francaise d'Entreprises de Dragages et de Travaux Publics, Societe Generale d'Entreprises.
5. J.A. Jones Construction Co., Grove Shepherd-MacLean Grove, Inc., A. B. Shanska Cementgjuteriet, Angus Robertson (Overseas) Ltd., Sir John Jackson Ltd.
6. Morrison-Knudsen International Constructors, Inc., Kaiser Engineers and Constructors, Inc., Perini Corp., John Laing & Son Ltd., George Wimpey & Co. Ltd., Bechtel Corp.
7. Merritt-Chapman & Scott Corp.
8. Christiani & Nielsen, A.S.Compagnie Francaise d'Entreprises, Conrad Zschokke Ltd., Gammon Engineers Ltd., Holland & Hannen and Cubitts Ltd., Guiseppe Torno & Cie—Soc. P. Az., C.O.E.H.B.A., S.A., Vinnell Co. Inc.

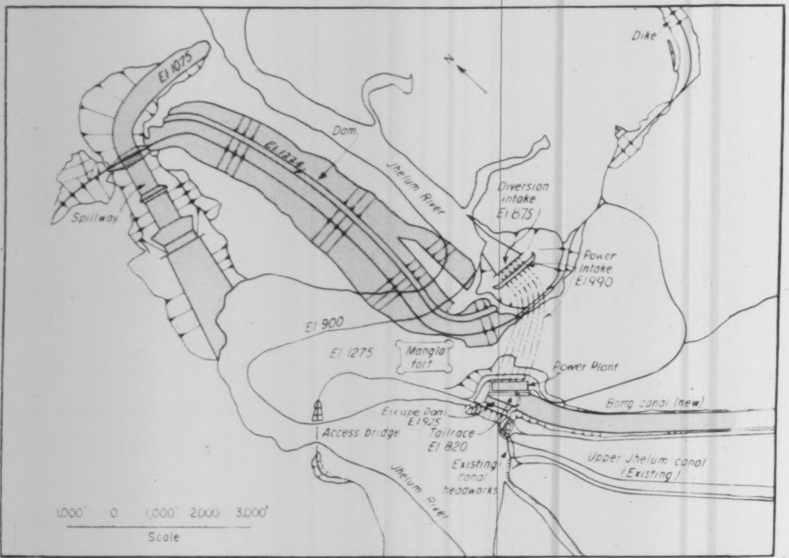
WAPDA came into existence in February, 1958. This $300-million dam is thus ready to go as soon as a contract can be awarded.

Mangla Dam will be a 370-ft-high fill of rolled sandstone with a sloping clay core. It will be located just above a point on the river where an existing headworks diverts water into the 9,000 cfs Upper Jhelum Canal, one of the country's large irrigation arteries. Here the river bends around a high rock promontory on its left bank (site of an old Mogul fort) and is confined on its right bank by a range of high hills.

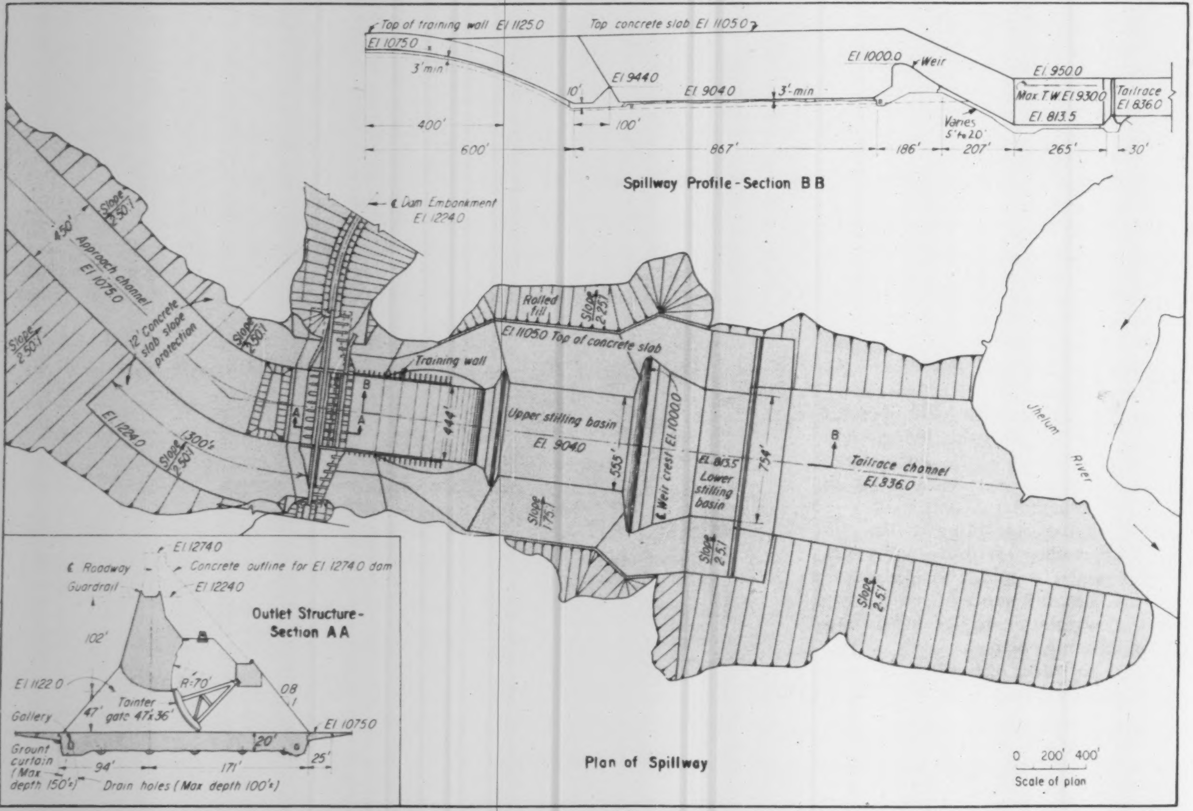
With its left end curving upstream behind the fort promontory, the dam will extend for about 10,000 ft across the river bed and curve slightly downstream into the hills forming the right abutment. The 1.2 million cfs concrete spillway will be located in this abutment. There will also be an adjacent emergency escape channel, which can operate in combination with the gated spillway to pass exceptional floods.

The intake for the irrigation outlets and the power station will be located on the left bank and will feed six tunnels (32 ft dia as driven, 28 ft when lined) passing through the abutment behind the fort. As shown in the accompanying preliminary plan, these tunnels are about 2,500 ft long. Subsequent studies have been under way to halve this length by a re-location of the inlet and outlet portals. Should this be possible, the number of tunnels could also be reduced from six to five because of the lower friction loss in shorter tunnels. In that case, the tunnels will connect via Y branches to ten 100,000 kw power units in the ultimate development.

Discharge will be into an afterbay, which will feed a new, 40,000-cfs, irrigation canal paralleling the existing Upper


Dike
N
El 1075
Dam
El 1224
Jhelum River
Spillway
Diversion intake El 875
Power intake El 990
El 900
El 1275
Mangla fort
Power Plant
Bong canal (new)
Escape Dam El 925
Access bridge
Tailrace El 820
Existing canal headworks
Upper Jhelum canal (Existing)
Jhelum River
1,000' 0 1,000' 2,000 3,000'
Scale

PRELIMINARY PLAN OF MANGLA DAM, which may be changed by shortening the discharge tunnels and slightly shifting the spillway.


Top of training wall El 1125.0
Top concrete slab El 1105.0
El 1075.0
3' min
10'
El 944.0
El 904.0
3'-min
El 1000.0
Weir
El 950.0
Max T.W El 930.0
Tailrace El 836.0
El 813.5
Varies 5' to 20'
400'
100'
600'
867'
186'
207'
265'
30'
Spillway Profile - Section B B
℄ Dam Embankment El 1224.0
Slope 2.50:1
450'
Approach channel El 1075.0
12' Concrete slab slope protection
Slope 2.50:1
Slope 2.50:1
El 1224.0
1300'±
Slope 2.50:1
Rolled fill
Slope 2.25:1
El 1105.0 Top of concrete slab
Training wall
B
A
A
444'
Upper stilling basin
El 904.0
555'
℄ Weir crest El 1000.0
El 813.5
Lower stilling basin
754'
B
Tailrace channel
El 836.0
Slope 1.75:1
Slope 2.5:1
Slope 2.5:1
Jhelum River
El 1274.0
℄ Roadway
Concrete outline for El 1274.0 dam
Guardrail
El 1224.0
Outlet Structure - Section A A
102'
El 1122.0
R=70'
0.8
1
Tainter gate 47'x36'
47'
Gallery
El 1075.0
20'
Grout curtain (Max depth 150'±)
94'
171'
25'
Drain holes (Max depth 100'±)
Plan of Spillway
0 200' 400'
Scale of plan

MANGLA SPILLWAY, designed for a record-breaking discharge of 1.2 million cfs, has submerged intakes and a two-level stilling basin. Nine 47x36-ft tainter gates will close the intake openings.

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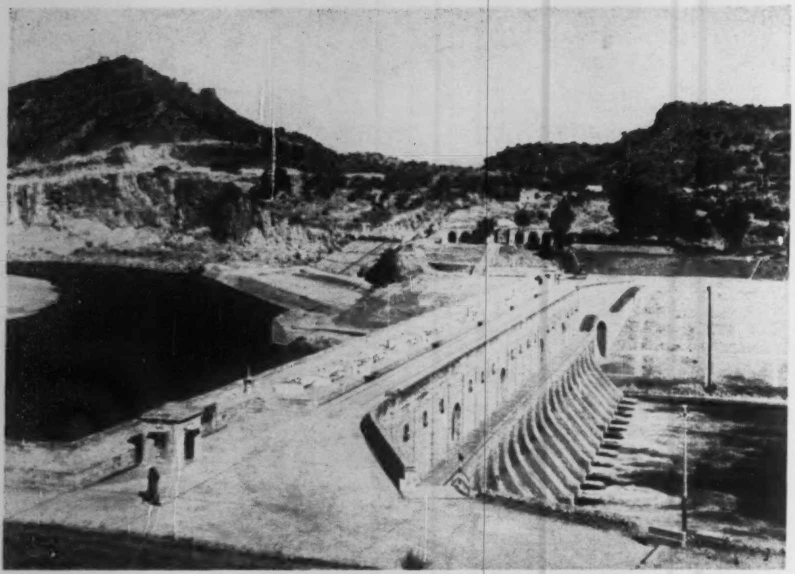

EXISTING CANAL HEADWORKS at Mangla will be outmoded when new power plant (to be near buildings in the background) discharges into a new canal.

Jhelum canal for about three miles until the two canals are joined. The afterbay will be separated from the river by a low dam over which the afterbay's water can escape when the canal cannot take it for some reason.

The main spillway will be a major construction job in itself, requiring 30 million cu yd of excavation and the placing of 1 million cu yd of concrete. The problem faced by its designers, the Harza Engineering Co., was to provide an inlet capacity of 1.2 million cfs in a structure of reasonable width, which they decided was about 500 ft. The solution, arrived at with the aid of model studies at the St. Anthony Falls lab in Minneapolis, was to put the openings and their gates down in the body of the structure to operate as submerged orifices under about a 100-ft head.

Under such pressure the openings will have far greater discharge capacity than if they were installed in the spillway crest. It was calculated that for a conventional overflow spillway to carry this discharge, gates 100 ft high would be needed. The nine orifice type openings to be used will require gates only 47 ft high. They will be 36 ft wide. An additional advantage of the submerged orifices is that no change will be required in them when the dam is raised, as is contemplated.

The spillway will have two stilling basins, one about half-way down the chute and the other at the bottom. This arrangement was adopted so that the excavation would not have to go so deep as it would for an uninterrupted chute.

The initial drop of the water from the crest to the upper stilling basin is about 130 ft. From here to the bottom of the lower basin is only 90 ft, but the water will drop over twice that distance, since it must first pass over an impounding weir in the upper basin. Details of this huge and unusual spillway are shown in an accompanying drawing.

On the basis of a 10,000-ft length and a 2,400-ft base width (increased to 3,600 ft in the closure section), Mangla Dam will require a fill of 75 million cu yd. An additional 5 million cu yd will be needed in saddle dikes. The dam design also contemplates a future heightening of 50 ft, which would add another 25 million cu yd to its volume. Such a heightening would also increase the capacity of the reservoir from 5.3 to 8.5 million ac ft, which would give Pakistan a substantial amount of water for irrigation over and above transfer requirements.

Construction problems at Mangla beyond those inherent in its large volumes of excavation, fill and concrete will include handling the huge annual floods in the river, grouting a cutoff deep into the alluvium of the river bottom and driving the tunnels through rather badly fractured rock in the left abutment. The tunnels will be used first for diversion. Later they will be converted to power and irrigation feeders by connecting them by inclined shafts at their upper ends to the intake at a 125-ft higher level.

Preliminary work already accomplished by WAPDA includes an access bridge over the river—three truss spans at a high level reached by a 75-ft-deep cut; some supervisory staff housing; and utility services and approach roads for the supervisory and labor camps.

According to the program envisioned by the consulting engineers (although the successful bidder can and may alter it) Mangla Dam would be built to its full height across the river valley to the right abutment, except for a closure section near the left abutment, before the river is diverted into the tunnels. This work would require nearly four years. During that time both the tunnels in the left abutment and the spillway on the right abutment would be completed.

The closure section would occupy the position through which the river normally flows. Cofferdams could thus be quickly built across the stream diverting it into the nearby tunnels. Once this is done, the left end of the main dam can be completed. The schedule calls for the entire project to be ready to go into service by the end of 1968.

Binnie, Deacon & Gourley of London are the consultants on the Mangla project. The designs were reviewed by an international board consisting of J. P. Growdon, U. S.; C. D. Morgan, Great Britain; and Edward C. Gruner, Switzerland.

• Link canals are large, too—Canal construction will constitute the second phase of the Indus Basin Treaty program. Seven new link canals will be required to transfer water from the western rivers to the eastern rivers. In totals of either dollars or cubic yards, they rival or exceed big storage dams.

Total excavation is estimated at 344 million cu yd, of which 232 million would be dry and 112 million wet. Cost will be about $260 million. The total length of the canals is 388 miles; combined carrying capacity at their respective headworks is 98,900 cfs. A breakdown of these figures is given in an accompanying table.

A certain amount of remodeling of existing link canals and canal systems is also a part of the plan. It amounts to an estimated $20 million, and is already about 30% complete.

Despite the fact that the new canals will be large, virtually medium-size rivers, they are not unprecedented in Pakistan. Actually, one of the canals to be remodeled, the Marala-Ravi Link (A on the map, p. 30), has a capacity of 22,000 cfs, about the same as the largest of the new link canals, the Chasma-Jhelum Link (6 on the map).

The first of the new link canals to be built will be the Trimmu-Sidhnai and the Sidhnai-Mailsi (1 and 2 on the map). Tipton & Kalmbach, Inc., the consulting engineers, are concentrating all present design effort on the 113 miles of these canals, whose total excavation will be about 50 million cu yd, mostly dry.

Some of the future links will be more difficult, at least in certain particulars. Several will have long sections in cuts

Size and Cost of Link Canals for Indus Basin Water Transfer

Name	Approximate Capacity at Head – cfs	Approximate Length in Miles (of 5,000 ft)	Estimated Cost (Millions of $)	Estimated Excavation (Million cu yd)
1. Trimmu-Sidhnai	11,000	44	20.0	20
2. Sidhnai-Mailsi	10,100	69	50.0	30
3. Rasul-Chenab	19,000	30	32.0	40
4. Chenab-Balloki	18,600	104	63.0	93
5. Balloki-Suleimanki II	6,500	40	19.0	18
6. Chasma-Jhelum	21,700	63	58.0	119
7. Taunsa-Chenab	12,000	38	18.0	24
total	98,900	388	260.0	344

up to 40 ft deep, either because the terrain requires it or because it is desirable to place them far enough below the prevailing groundwater level so that they can also serve as drains and reduce waterlogging conditions.

One of the canals, Balloki-Suleimanke (C on the map) is really an enlargement to 18,500 cfs of an existing 15,200 cfs canal. However, the lower end of this old canal was lined, and it is considered uneconomical and impractical to enlarge that portion. Since it can safely carry only 12,000 cfs in its present condition, the additional 6,500 cfs required will be obtained by a new parallel canal in this section (5 on the map).

Another of the future canals, Chasma-Jhelum (6 on the map), will be notable because of the 119 million cu yd of excavation required. This will also be the largest of the new links—21,700 cfs.

The consulting engineers have decided that lining will be avoided wherever possible because of the cost. Lining will be considered in sections where the groundwater table is below the bed level of the canal, since it would minimize waterlogging problems. Lining would also reduce seepage losses, although this is not important because water is relatively plentiful.

It is contemplated that all of the new link canals will be built with modern mechanized methods under contracts awarded on the basis of international competition. The principal reason for this is to assure speedy completion—it is probable that the hand tool and donkey method customarily used in Pakistan for canal construction would be cheaper. Man and animal power, however, are being used in repairing the old link canals and canal systems that are a part of the water transfer scheme.

The link canal program will require 394 appurtenant structures—bridges, siphons, regulators, aqueducts and drainage inlets. Included are 14 railroad bridges and 30 bridges on main arterial highways. Excavation alone for these structures will total 4 million cu yd.

Present design effort is being concentrated on the first canals to be advertised for bids. And they are typical of the entire program. The Trimmu-Sidhnai Link, with an 11,000 cfs capacity, will parallel an existing canal for most of its length from the Chenab River to the Ravi River. It will be 253 ft wide at the bottom, with 3:1 side slopes flattening to 1.5:1 above the water line. Water depth will be about 12 ft.

The canal takes off from the Chenab just above the existing Trimmu barrage. It will flow into the Ravi above a new barrage, Sidhnai.

The first 10 miles of the 44-mile canal will be in cut and the remaining length partly in cut. Except for the first nine miles and the last four miles, the groundwater level is below the canal bed. Estimated excavation totals 18.8 million cu yd dry and 1.8 million cu yd wet. A total of 42 structures will be required, including two railway bridges and four arterial highway bridges. There are also seven siphons and seven aqueducts required for intercepting streams.

The total estimated construction cost is $17 million. Land, engineering and other costs add another $3.4 million. It would cost another $11 million to line this canal, which is why the engineers have not recommended it.

The Sidhnai-Mailsi Link, of about the same capacity but 69 miles long, will run between the Ravi and the Sutlej rivers, and also supply an existing canal beyond the Sutlej. It will take off from the new Sidhnai barrage with its full capacity of 10,100 cfs. By the time it reaches the Sutlej, this capacity will be reduced to 4,100 cfs as a result of discharges into existing feeder canals along the way. (These canals are among those now served by Sutlej and Ravi water, which has been awarded to India. They would run dry but for the transfer of Chenab and Jhelum water by the new link canal.) The canal will discharge into the Sutlej above a new barrage, Mailsi.

The Sidhnai-Mailsi Link will be unlined in the first 12 miles and lined for the remaining distance. The first 28 miles of the canal will be in cut; elsewhere, part cut and fill. Required excavation will total 25.4 million cu yd dry and 3.4 million cu yd wet. There are 75 structures along the route, including two railway bridges, four main highway bridges, eight aqueducts and 11 siphons. Estimated construction cost is $40 million; total cost is about $50 million.

The estimates thus indicate a probable total construction cost for these two canals in the neighborhood of $57 million. There is also always a possibility of changes in the plans that would alter this figure substantially. More lining might be used or, as has been considered, the canal might be carried across the Sutlej by a siphon instead of discharging behind a new Mailsi barrage.

The new barrages required in the link canal system will be awarded as separate contracts. Five of them are projected, as shown on the map, and they are being designed by Coode & Partners, consulting engineers of London. The barrages will cost between $10 million and $20 million each, and a bid call will be issued soon for Sidhnai and Mailsi.

• Tarbela to set precedents—To feed these canals will require more storage then Mangla Dam can provide on the Jhelum. The Treaty program, therefore, includes a second storage dam to be built on the Indus—not an ordinary idea by any means. For, while the flow of the Indus has frequently been slowed down by the great gated barrages that block its path, this powerful river has never been completely stopped. When this occurs it will be an epoch-making event—and it is being fashioned in the plans for Tarbela Dam.

Tarbela will set other precedents, too. It will be a rockfill with a volume of at least 100 million cu yd, and possibly as much as 130 million. That would make it larger than Fort Peck Dam on the Missouri, now the world's largest.

In addition, the minimum size spillway that could possibly handle Indus River floods at the Tarbela location would have to have a capacity of 1.6 million cfs. That would be considerably larger than the record-setting 1 million cfs overflow for which Grand Coulee Dam on the Columbia was designed. Some of the studies point to the advisability of a 2 million cfs capacity for the Tarbela spillway. In any event, building the Tarbela spillway will be equivalent to reproducing high up on a mountain side a structure comparable to the barrages that now cross the Indus itself.

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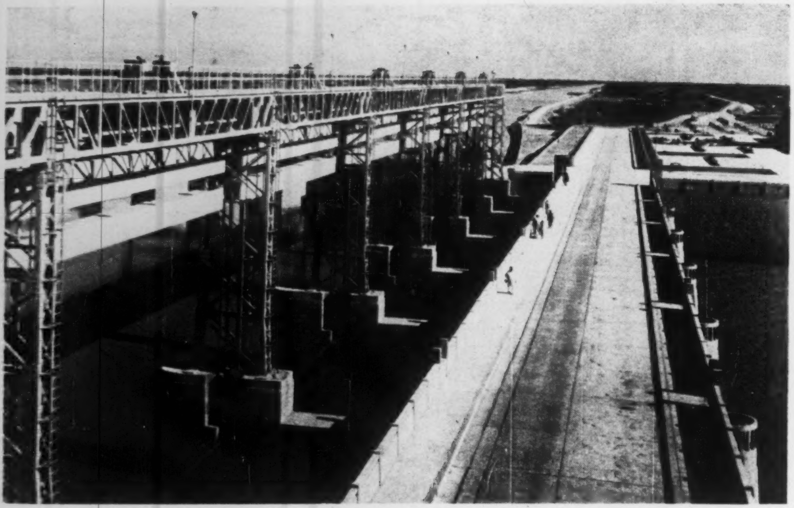

DIVERSION BARRAGES like Taunsa on the Indus, shown here, will be built at other locations to serve the new link canals.

ment, either from WAPDA or Tippetts-Abbett-McCarthy-Stratton, as to what the definite project plan will be. But field studies that the consulting firm has had under way for more than a year give some indication of the nature of the project under consideration.

The Tarbela site (or sites, since there are several possibilities in a 10-mile reach of the river) was discovered in 1953 by Tipton and Hill, consulting engineers of Denver, in making a general survey of the water resources of West Pakistan. Harza Engineering Co. worked on the project until a year ago. When Harza became general consultant to WAPDA, the studies were turned over to TAMS, which had had a long record of experience in the Indus Basin as consultant to the World Bank during the years of Treaty negotiations.

Of three sites originally considered, most attention has been given to the one farthest downstream. WAPDA's preliminary work in surveying access roads and rail lines and in laying out housing and workshops would seem to be focused on this location. And the consultants have done more rotary and percussion drilling here than at the other sites.

This site will require a dam somewhat over 10,000 ft long. The dam is to be an earth and rockfill of the sloping core type. To provide the live storage required by the Treaty (4.2 million ac ft), plus some extra for local irrigation, it would have to be 340 ft high initially. But since there is a potential storage of over 10 million ac ft at the site, the dam will probably be designed for future raising.

One advantage of the downstream site is that there is a natural valley on the left bank. The valley can be converted into a spillway discharge channel, and the excavated materials can be used in the dam. The spillway structures and gates would be aligned parallel to the river and connected to this valley by a cut. Preliminary studies indicate that a spillway with twenty-six 50x40-ft gates operating under a 10-ft surcharge could discharge 2 million cfs.

Although it is proposed to develop only the irrigation potential of Tarbela initially, provision must be made for a future power plant. The power plant and irrigation releases would be located on the right bank—the only place where rock is near enough to the surface for economical foundations. Preliminary plans meet both of these requirements with a single facility. It would consist of sixteen 23-ft-dia pipes placed side by side and incased in concrete. In total, they could discharge 100,000 cfs of water into the river for diversion into the link canals downstream. Ten of the pipes would be available to feed a future powerhouse, while the other six would be exclusively for irrigation releases.

Problems posed by this large irrigation-power facility and the much larger spillway structure are formidable. But Tarbela designers are faced with an even more critical problem in the foundations for the dam itself. The river bed consists of cobbles, coarse sand, fine sand and silt to an average depth of 300 ft, and reaching 400 ft in some places before solid rock is encountered. Some way must be found to reduce the velocity of water flowing from the reservoir under the dam through this pervious material.

A grouted cutoff wall is being considered, although there are serious questions about its effectiveness. Another proposal is to use a blanket of silt on the river bottom, extending for 5,000 ft upstream from the dam, and a deep drain at the downstream toe. This

WORLD'S LARGEST DAM, planned to cross the Indus at Tarbela, will extend for two miles from this left abutment and may require 130 million cu yd of fill.

drain, backed up by filter material, would be constructed as a trench about 60 ft deep.

An interesting point is that any dam built at the Tarbela site will approach 100 million cu yd in volume. If an upstream blanket is adopted, the volume will be nearer 130 million cu yd. It is for this economic reason, and also for assurance that the dam's safety will not be endangered by movement of fine sand materials in the pervious river bottom, that much investigational effort and expense has been directed at this foundation question. Already 5,000 ft of relatively shallow (125-ft) holes have been drilled for permeability studies, and a program of drilling 5,000 ft of deep holes to bedrock is under way.

A final critical problem being studied at Tarbela relates to the method of diverting the river during construction. Provisions must be made for passing flood flows up to 1 million cfs. One possibility is to build the dam out from both banks, leaving the center open for the river channel. This opening would then gradually be built up to closure after the streamflow had been diverted through and over the powerhouse site on the right bank. Here rock is near the surface, erosion would be at a minimum, and the final closure section could be short and of relatively small volume.

• **Busy, beckoning future**—As an era of development begins for Pakistan, it faces large and critical problems. Obviously one of them is posed by the huge construction program required for water storage and transfer under the Indus Basin Water Treaty. Its solution will take at least a decade.

In the meantime, there are two other problems that Pakistan considers equally critical. One is the need for reclaiming many millions of acres of saline and waterlogged land. The need is pointed up by the fact that about 100,000 acres a year go out of production from these causes. Unless this attrition can be stopped, dams to irrigate more new acres are a losing proposition.

The Treaty program provides financing for another 2,500 tubewells to supplement the 2,000-well project now under way to lower the watertable and reduce waterlogging. And WAPDA is so well pleased with the possibilities that it has raised its sights toward a program of reclamation and salinity control with tubewells and drainage that would cover all of the 23 million acres under irrigation in the country. It might require 30,000 tubewells and cost $300 million.

The second big problem, which actually requires immediate solution, is to assure that the facilities designed for the Treaty water transfer scheme do not foreclose any possibilities for future development beyond the water transfer requirements. Thus the Mangla project has been designed so that its dam can be raised and its power plant enlarged whenever this is desirable and possible. And a similar problem must be solved at Tarbela.

There is a possibility that with the proper design at the proper location Tarbela reservoir water could be diverted into a natural off-channel reservoir known as Dok Pathan, which would hold 15 million acre ft. It has to be decided whether this much storage in one place will ever be needed, and if so, whether it is worth a large present expenditure to assure its future development, even though the cost per acre foot might be less than half of the cost of on-channel storage.

Problems like these beckon Pakistan to a busy construction future.

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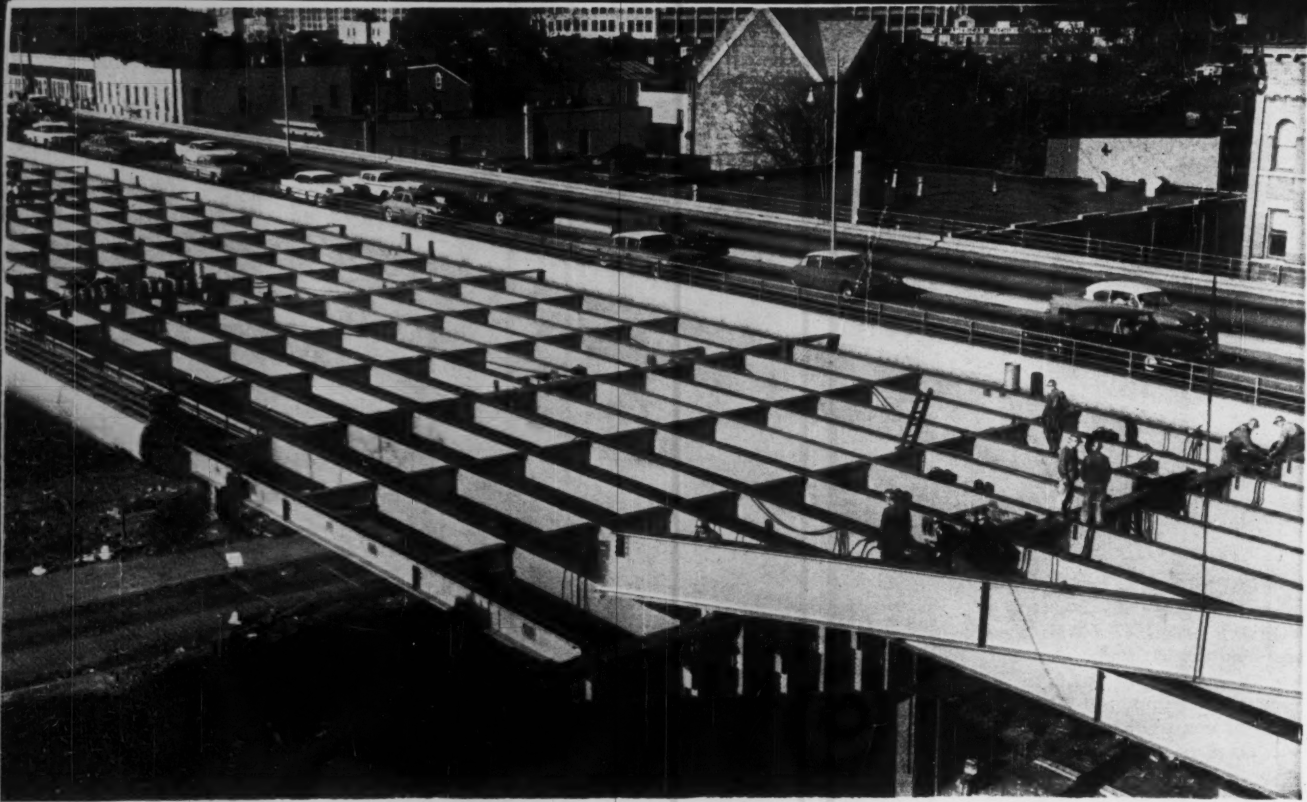


Steel girders of new six-lane expressway form pattern parallel to old four-lane parkway.

Four Lanes to Six: Three Giant Steps

The contractor is using a three-phase work plan to construct the first segment of the $84-million Gowanus Expressway in Brooklyn, N. Y.

The new six-lane elevated expressway will replace the Gowanus Parkway, which carries only passenger car traffic. The parkway is a congested four-lane, undivided roadway that was built in 1944 atop the old Third Avenue Elevated (rapid transit) structure when that line was abandoned. The segment, which is now being replaced, has no provision for off-roadway parking for disabled vehicles.

Bethlehem Steel Co. is handling the project in three steps (see drawing):

- Construction of five-sevenths of the new structure, parallel to the old.
- Removal of old parkway section.
- Completion of the new expressway section.

The construction plan was chosen to minimize interference with traffic.

The new roadway is a steel cantilevered structure with "wings" extending about two lanes beyond the main supporting columns on each side. This will permit maximum use of street level of Third Ave. for traffic and a series of parks. Total width of the new structure will be 94 ft 6 in., including two 38-ft roadways and a 13-ft median strip with turnoffs for disabled vehicles.

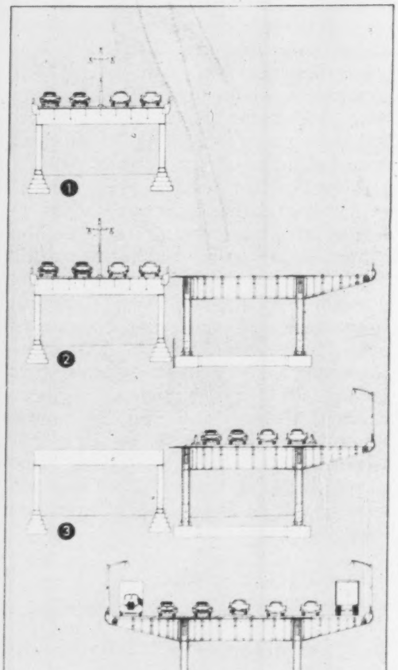
Ironworkers are now erecting the first five-sevenths of the new structure. When this has been completed, crews will install the concrete bridge deck. Traffic, still limited to four lanes, will be diverted to this section from the old parkway. The contractor then will demolish the old structure.

With the old structure out of the way, final phase of the work will be to erect and pave the westernmost two-sevenths of the expressway. Not until this section has been completed and opened to traffic will be the easternmost two-sevenths of the new roadway be used. That's necessary to preserve the balance of the cantilevered structure. Final step will be to build the 13-ft-wide center median strip.

The expressway will be a link in New York City's arterial network and part of the Interstate system. When segments still to be built north and south of the section now being erected are ready, the expressway will be the principal approach to the Narrows Bridge, now under construction between Brooklyn and Staten Island.

On the south, it will tie into the Belt Parkway to Coney Island, Queens and Long Island; on the north, to the Brooklyn-Queens Expressway.

Slattery Contracting Co. of New York City is the general contractor. Consulting engineers are Madigan-Hyland, New York City.



FOUR STEPS in the shift from old parkway to the new expressway.

Hugh Kirkland (Right), President, Kirkland Masonry, Inc., Miami, Fla., talking to Dick Rogers, his Dodge Representative.

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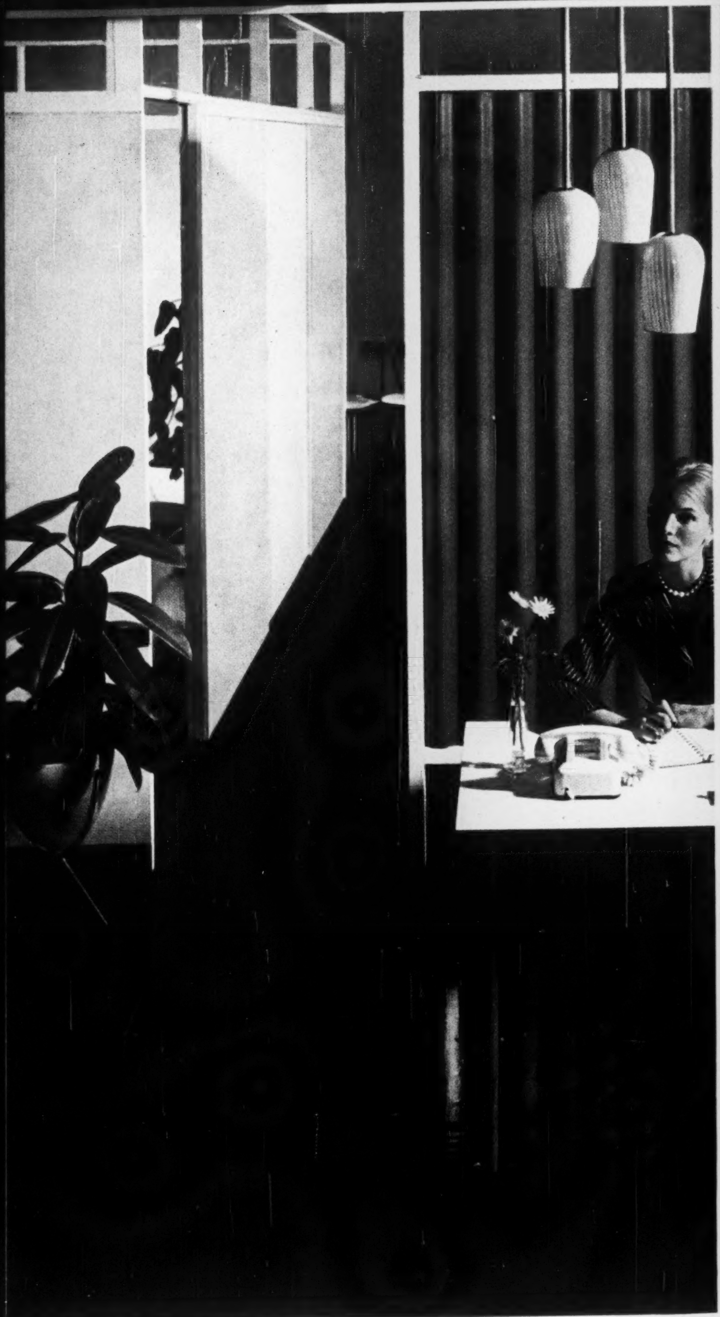
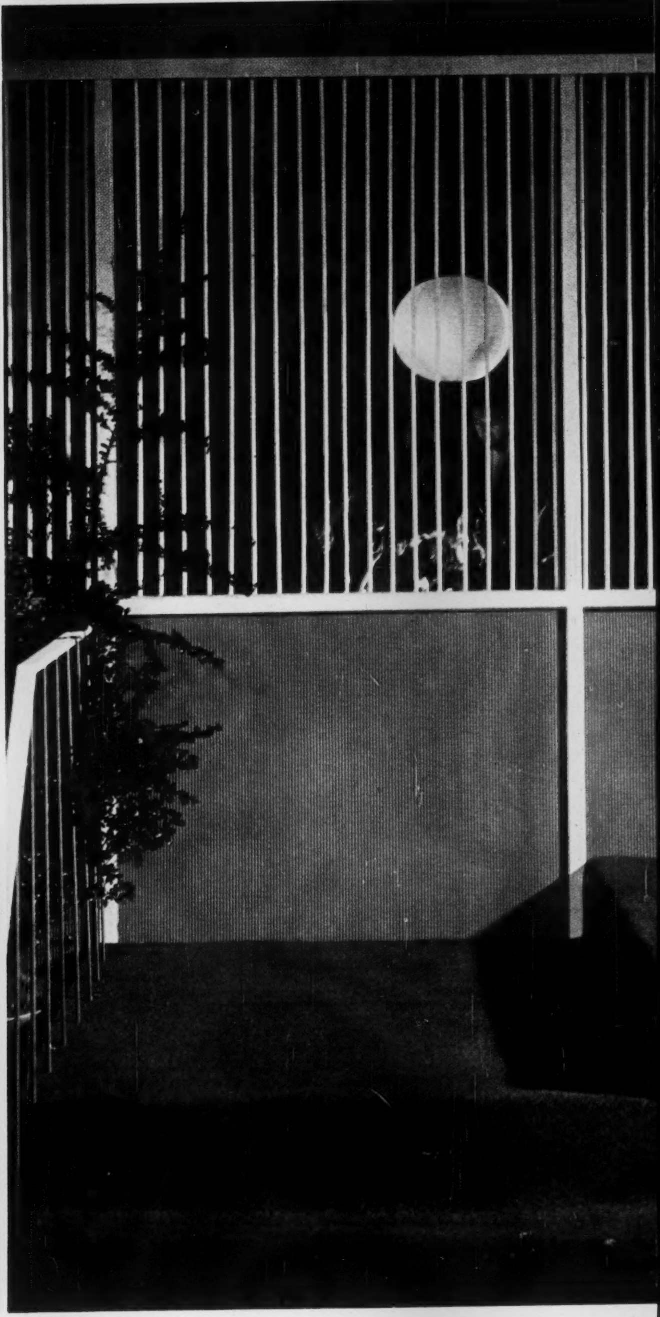


FACTORY: China blend corrugated panel. Partitions: bright yellow, bone white flat sheets.



RESTAURANT: Turquoise ribbed sheet as interior wall.

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Field and Office

Trucks Place Riprap at Oahe Dam

The contractor for Stage 7 earthwork at Oahe Dam has developed an efficient and ingenious method of riprapping the upstream face of the 90-million-cu-yd embankment.

The entire insulation blanket to protect the fill from wave action consists of three layers: a 12-in. layer of filter gravel placed directly on the rolled earth embankment; then a 12-in. layer of 2-in. to 6-in. spalls; and finally 3 ft of boulders ranging in size from 4 in. to 3 ft. A small percentage of the stones can be as thick as 3.5 ft, according to the specifications.

The $2.7-million contract, held by the Missouri Basin Construction Co., calls for the placement of 728,000 tons of riprap, 95,000 tons of spalls and 90,000 tons of filter blanket.

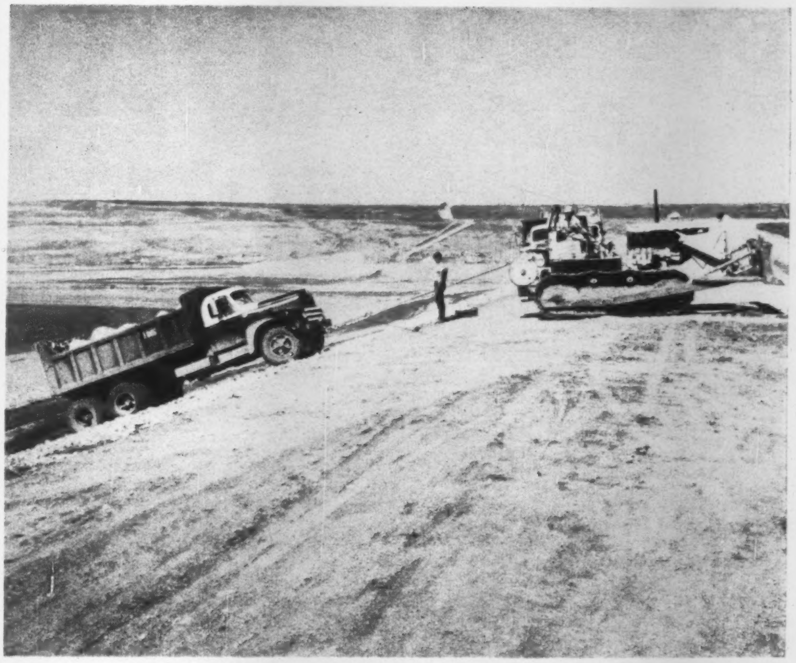
Local field stone for the riprap is harvested within a 20-mile radius of the dam. Most of it is scalped off glacial terminal moraine. Crawler tractors equipped with rippers, bulldozer blades and rock rakes stockpile the stone, which lies at or just below the ground surface. Front-end loaders and tractor-shovels load the stone into a fleet of 25 heavy-duty trucks for transportation to the dam. Average load is about 12 tons.

At the damsite the end-dump trucks are lowered backwards down the face of embankment on 600 ft of ¾-in. wire rope from a power winch on the rear of a heavy-duty crawler tractor. The trucks are lowered a maximum of 550 ft down the upstream face of the dam, which has a slope of 1 on 3. They are kept running in gear at all times, to keep from rutting or otherwise displacing the spalls or filter blanket.

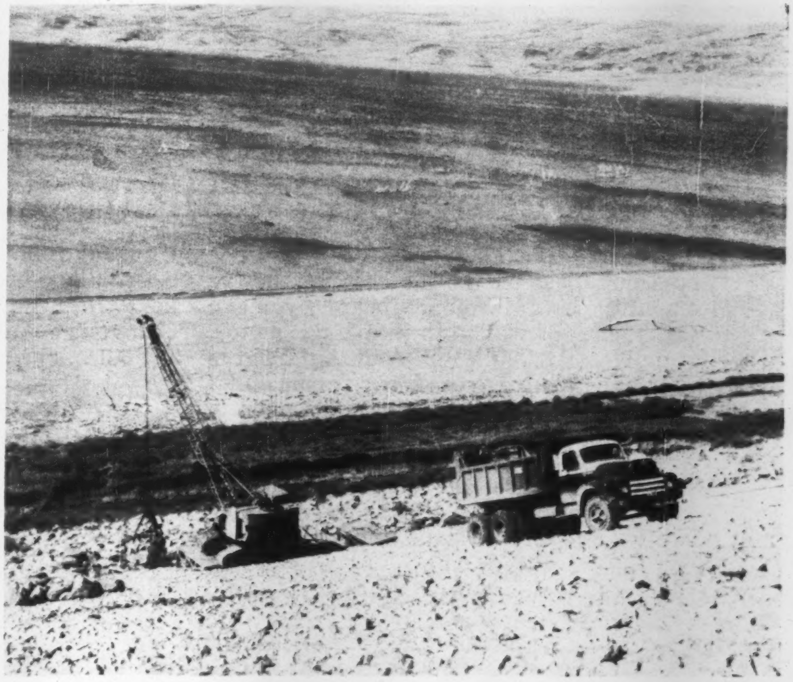
The riprap is placed in two areas along the 9,300-ft-long embankment at the same time. Each truck dumps its load as near final position as possible, for final placement by cranes and ¾-cu yd orange-peel buckets.

Both cranes operate on steel platforms supported horizontally on the sloping embankment. Each machine has three of these platforms, which are leapfrogged so the cranes can work continuously.

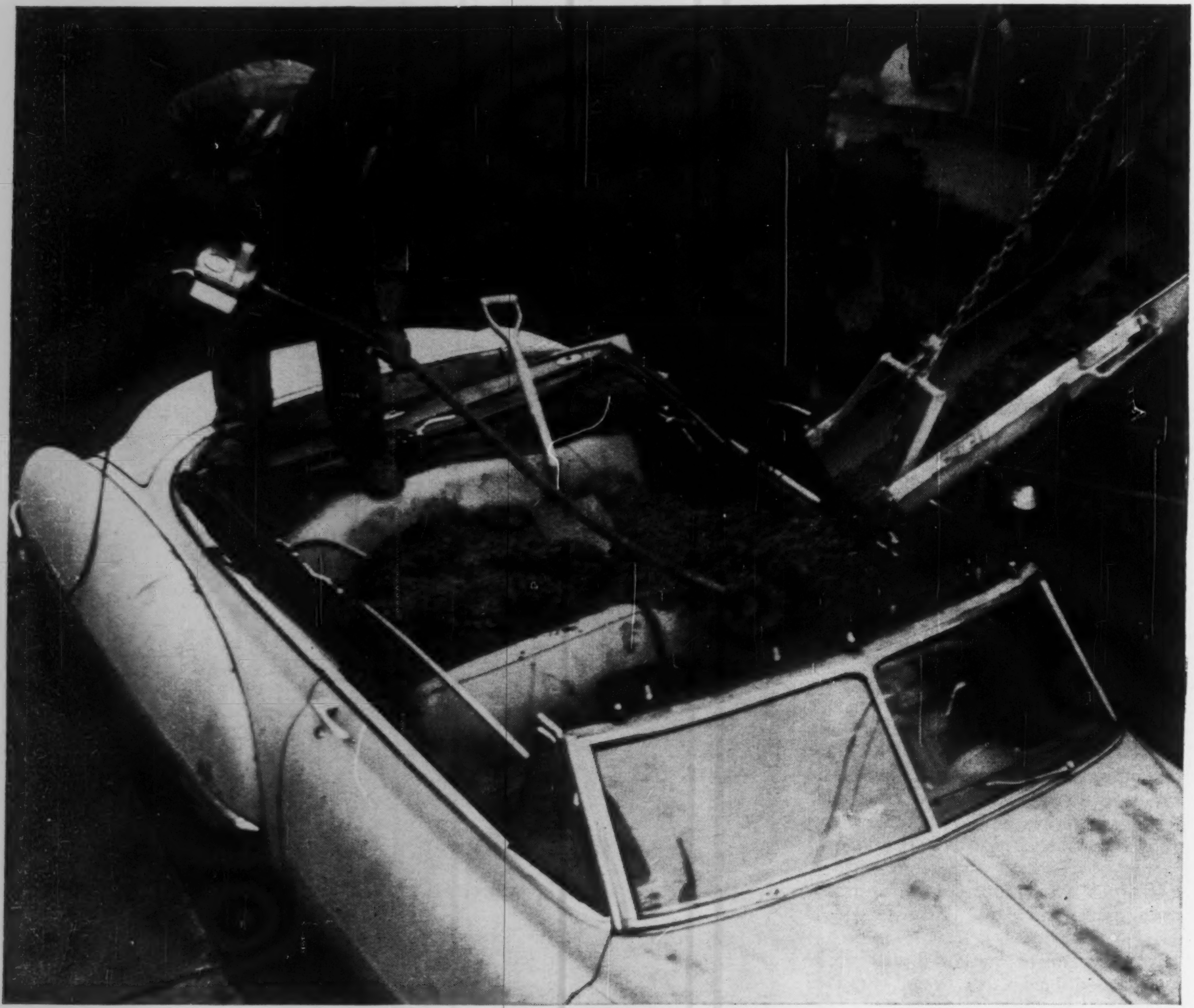
Lee R. Crist is resident engineer on embankment for the Corps of Engineers. Vern Willaford is superintendent for the Missouri Basin Construction Co. John W. Sibert, Jr., is area engineer for the Corps, in charge of Oahe construction.



Truckload of rock is winched down slope to point where . . .



. . . Waiting crane will place rock in final position.



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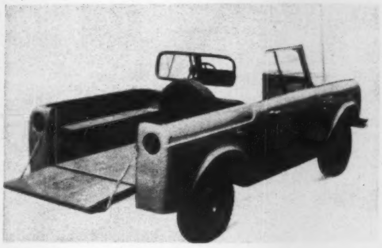
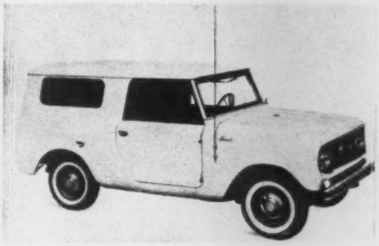


pickup truck on addition of specially designed cab or into a . . .



station wagon type panel truck. It's available in two and four wheel drive.

Versatility Is Keynote in Truck Line

A six-passenger pickup truck, a low chassis light-duty truck, and a small, extremely versatile, all-purpose vehicle for passengers and cargo are among the vehicles being produced by International Harvester this year.

The pickup and the medium duty truck are redesigns of models previously manufactured by International; the all-purpose vehicle is a completely new unit.

Called The Scout, this unit is available in either two or four wheel drive. Both models have a 100-in. wheelbase and an overall length of 12 ft 10 in. The 4 x 2 has an overall height (loaded) of 67 in. while the 4 x 4 stands at 68 in.

One of the principal characteristics of the Scout is its versatility. It can be converted quickly from an open runabout with a sport-car appearance to a pickup truck, a station wagon type panel truck or a door-less, roof-less delivery wagon.

The Scout is delivered with an easily detached cab that covers only the front seat and leaves the five-foot cargo area open in the manner of a conventional pickup.

Removal of the cab leaves the unit as an open runabout with space for three passengers on the 52 in. wide front seat and room for at least six more passengers on the two five-foot long wheel housings in the body.

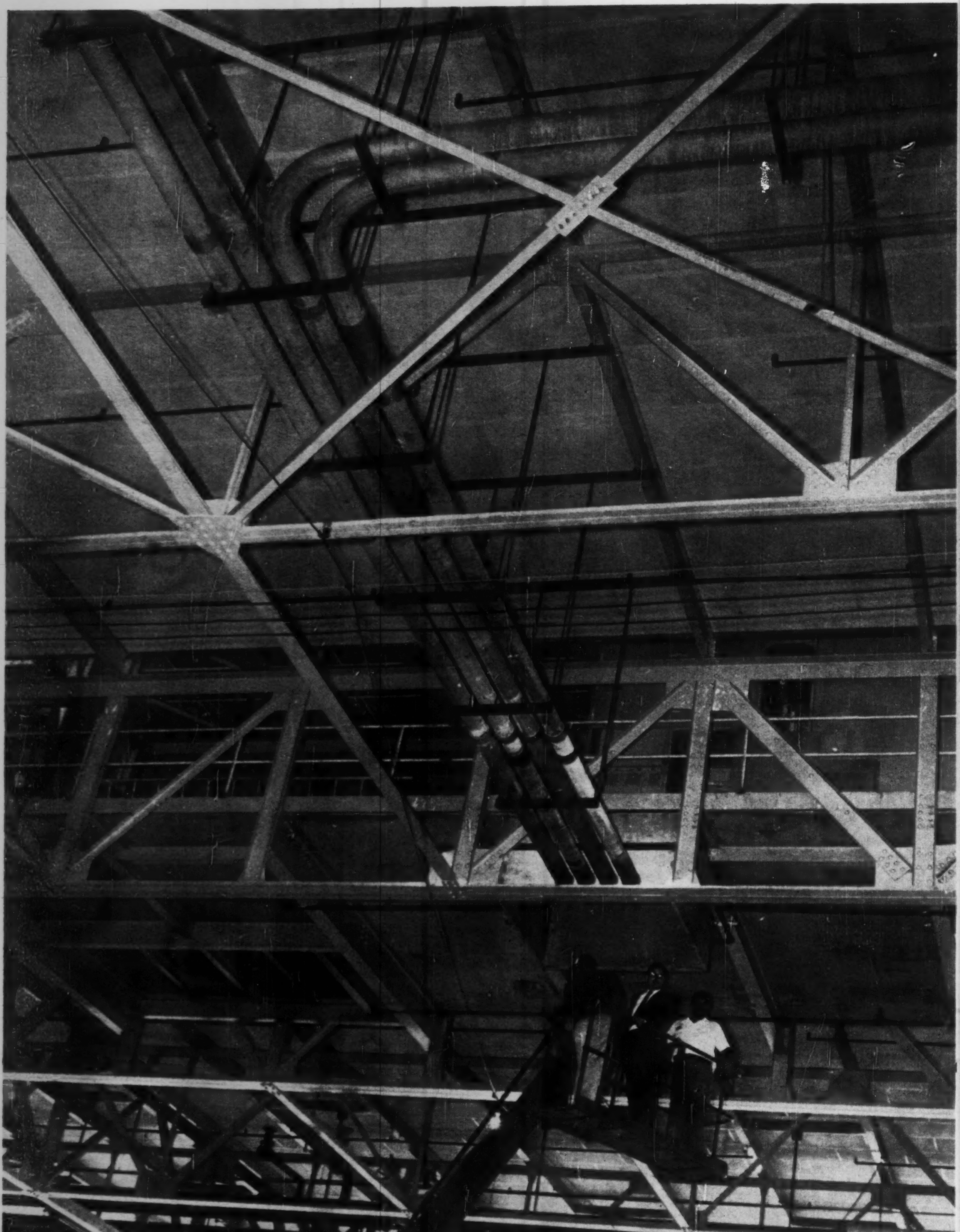
For short hops with repeated in and out trips for the driver, the doors can be removed and the windshield can be folded forward.

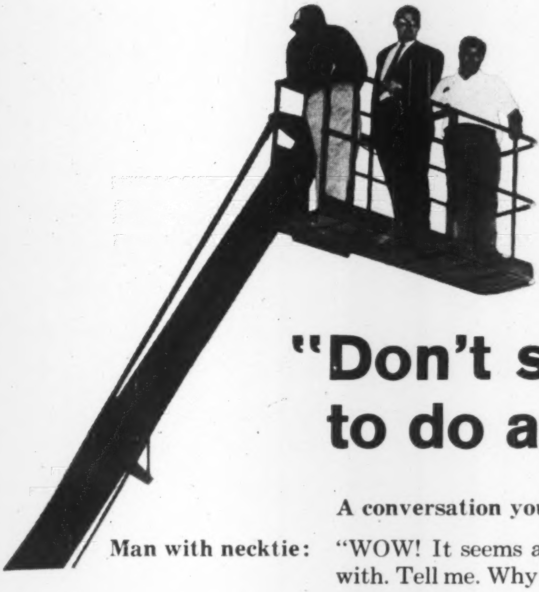
For complete weatherproofing of both driver compartment and cargo area, a one piece removable travel top is offered as optional equipment. This easily installed top makes a station wagon of the Scout.

The Scout is equipped with a 152 cu. in. IH Comanche engine which develops 90 hp at 4,400 rpm. Heavy duty battery, oversized cooling system, radio, heater, defroster, rear tow loop and rear bumper are optional on both two and four wheel drive models. The 4 x 4 can also be equipped with wheel locking hubs, front winch, power take-off and snow plow.

The light duty trucks are of the 4,200 to 8,800 gvw class, in International's C-line. Main difference between the 1961 models and those of previous years are reduced overall heights (3 to 5 in.) and increased wheelbase lengths. The Travelette (upper left), a six-passenger four-door pickup model, has a cab that is 5½ in. longer than that of previous models and a full width rear seat.

The Model C-130 (upper right) is available with a variety of body styles and types and in wheelbases of from 122 to 140 in. Standard Power plant is a V-8 engine rated at 155 hp, but a 193 hp V-8 is also available as are three International six cylinder engines, one of which runs on liquified petroleum gas. INTERNATIONAL HARVESTER CO., 180 N MICHIGAN AVE., CHICAGO 1, ILL.





"Don't send a pony to do a horse's job"

A conversation you might hear around any good raceway.

Man with necktie: "WOW! It seems a lot higher once you're up here. Okay. Let's get this over with. Tell me. Why *steel* conduit instead of . . .?"

White shirt: "Mainly because steel is stronger and gives us excellent protection against damage to conductors."

Work shirt: "It's easy to install. You can thread with regular dies, and you don't need special lubricants."

Necktie: "Well, that ought to do it. I just wanted a few facts to put in a report I'm making. Let's go back down and . . ."

Work shirt: "You don't have to baby steel conduit. You can bend it without worrying about it flattening out or crinkling."

Necktie: "Fine. Okay, let's get down off . . ."

White shirt: "Steel conduit can be installed in all atmospheric conditions and hazardous locations."

Necktie: "Well, that wraps 'er up. Let's go down and . . ."

Work shirt: "You don't have to give steel any special coating for concrete installations."

Necktie: "I've never been up on one of these things before . . . feel a little shaky . . ."

White shirt: "Steel conduit provides a grounded metallic system; induced currents are drained off without danger."

Necktie: "Let's go down."

Work shirt: "Steel conduit has a smooth interior . . . makes it easy to pull and fish wires. Saves time and money."

Necktie: "Let's go down."

White shirt: "We wouldn't use anything *but* steel conduit here. You know . . . don't send a pony to do a horse's job. Okay. Want to go down?"

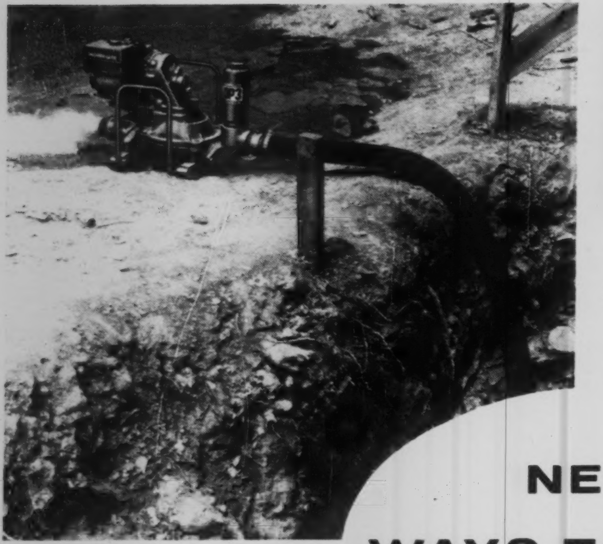
Necktie: "Yes . . . yes . . . steel conduit . . . certainly!"

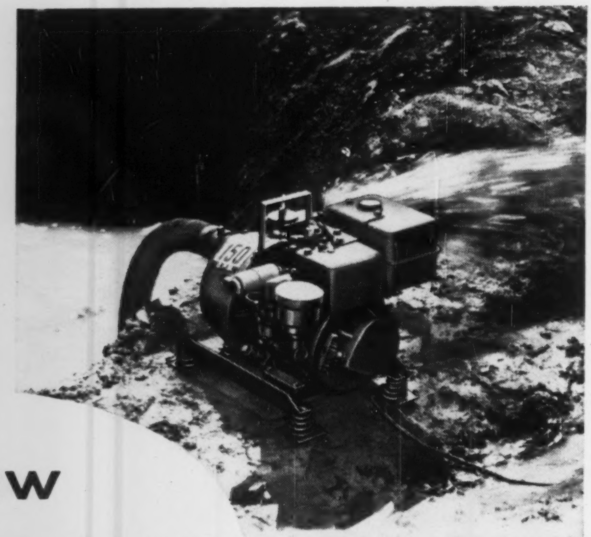
America's leading steel pipe manufacturer supplying America's foremost conduit manufacturers.

National Tube
Division of
United States Steel

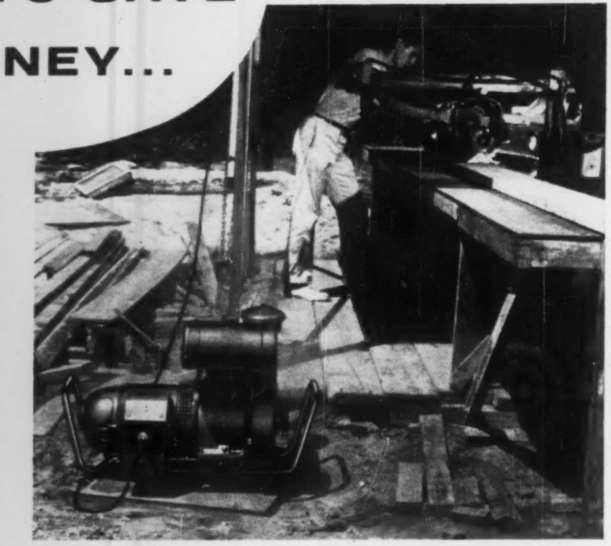
This mark tells you a product is made of modern, dependable Steel.

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
United States Steel Export Company, New York





NEW WAYS TO SAVE MONEY...



Homelite Pumps and Generators with **4-Cycle** Engines

A brand new line of economy-priced, 4-cycle engine-driven pumps and generators has just been added to Homelite's roster of construction equipment. Now, from one sales and service source, you can get the exact carryable pumps and generators your jobs require . . . low-cost, 4-cycle engine powered equipment . . . or finest-quality carryable pumps and generators powered by Homelite 2-cycle engines.

Homelite's new, self-priming pumps are available in 1½", 2", and 3" centrifugal and 3" diaphragm models. They feature new, extra-long-life CERASEAL ceramic seals, Briggs & Stratton engines with special, long-life valves and variable speed control; 28' suction lift and big pumping capacities. Homelite's new generators come in 1500, 3000 and 5000 watts sizes with quality features such as TOOLSAVER voltage regulation; Wisconsin & Clinton engines with long-life Stellite exhaust valves; and simple, trouble-free generator construction.

All Homelite 4-cycle pumps and generators are available with either gasoline or L. P. gas operated engines.

Ask for a demonstration of these new, compact, lightweight and easily carried units now.

Homelite factory branches are located throughout the country. Your nearest one is as near as your phone. Call them or write for convincing demonstration or rapid service in any way.

HOMELITE

CARRYABLE PUMPS • GENERATORS
BLOWERS • CHAIN SAWS

Franchises available in some areas, write for details.

HOMELITE • A DIVISION OF TEXTRON INC., 1102 RIVERDALE AVE., PORT CHESTER, N.Y.

IN CANADA — Terry Machinery Co., Ltd.

Slichter Retires from the Corps

Francis B. Slichter

After thirty-two years of service with the Corps of Engineers, Francis B. Slichter, Chief of the Engineering Division, Civil Works, in the Office of the Chief of Army Engineers is retiring on March 10. He will establish practice as a consulting engineer from his home at Box Hill Farm, Burke, Va.

Mr. Slichter has served in his present position since March, 1949. He had joined the Army Engineers in 1928 at their Kansas City District during the initial studies on the Missouri River Basin. When the Missouri River Division was formed in 1932, he transferred to that organization where he worked on the design and construction of Fort Peck Dam.

Later as chief of the engineering division at the Omaha headquarters of the Missouri River Division he was active in development of the Pick-Sloan Plan. Following Congressional approval of that plan, Mr. Slichter was responsible for getting design and construction under way on Garrison, Oahe and Fort Randall dams, its key reservoir projects.

During World War II he was engaged in design and construction of military airfields, ordnance plants and military training bases.

Mr. Slichter obtained his civil engineering education at the University of Kansas City, Missouri, and the University of Kansas. He is presently vice-chairman of the U. S. Committee on Large Dams.

AWWA Nominates Cramer

The American Water Works Association has nominated John W. Cramer, senior partner in the Lincoln, Neb. consulting firm of Fulton & Cramer, as its candidate for president in 1961-62. The election will be held at the association's annual convention in Detroit next June.

A registered professional engineer in Colorado, Idaho, Iowa, Kansas, Missouri, Nebraska, and South Dakota, Mr. Cramer received his degree in civil engineering from the University of Nebraska in 1940. Before forming Fulton & Cramer in 1945, he worked for Lockheed Aircraft Corp. in Burbank, Calif. Mr. Cramer has been vice president of AWWA for the past year.

Other nominees are William D. Hurst, city engineer and chairman of commissioners of the Greater Winnipeg, Canada, Water and Sanitation Districts, for vice president; and William J. Orchard, retired general manager of Wallace & Tiernan Inc., Belleville, N. J., for treasurer.

Briefs . . .

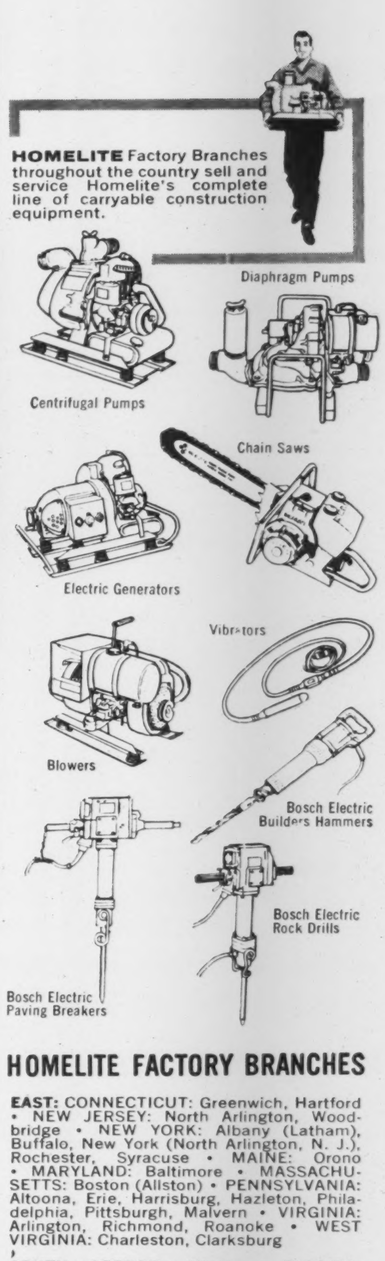
Business

Ralph S. Laubscher, for 41 years the vice president in charge of construction of the Cleveland construction firm of Sam W. Emerson Co., has been promoted to president. He succeeds **Sam W. Emerson,** the founder, who becomes chairman of the board.

Robert A. Hubbard, formerly a staff engineer with the Virginia Department of Highways, has joined Wilbur Smith and Associates, consulting engineers of New Haven, Conn. He will have his headquarters in Richmond, Va.

Kruse, Flaherty & Associates, consulting engineers previously of Wayne, N. J., have moved their offices to Jersey City, N. J. They specialize in design and engineering of commercial and industrial buildings. Both **H. E. Kruse** and **E. J. Flaherty** were formerly with McConathy, Hoffman & Associates, New York City.

M. A. Perrott of London, England, has been appointed president of Commonwealth Construction Co. Ltd., Vancouver, B. C. New vice presidents: **William Gilliland, Richard H. Ansley.**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Bosch Electric Rock Drills
Bosch Electric Paving Breakers

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SOUTH: GEORGIA: Atlanta • FLORIDA: Jacksonville, Miami • LOUISIANA: New Orleans (Metairie), Shreveport (Bossier City) • NORTH CAROLINA: Charlotte, Raleigh • OKLAHOMA: Oklahoma City • TENNESSEE: Knoxville, Memphis • TEXAS: Dallas, Lufkin

MID-WEST: ILLINOIS: Chicago (Stone Park) • INDIANA: Indianapolis • MICHIGAN: Detroit, Grand Rapids • MINNESOTA: St. Paul • MISSOURI: Kansas City, St. Louis • NEBRASKA: Omaha • OHIO: Cincinnati, Cleveland, Toledo • WISCONSIN: Milwaukee

WEST: CALIFORNIA: Fresno, Los Angeles (Alhambra), Sacramento, San Francisco • COLORADO: Denver • OREGON: Portland • UTAH: Salt Lake City • WASHINGTON: Seattle, Spokane

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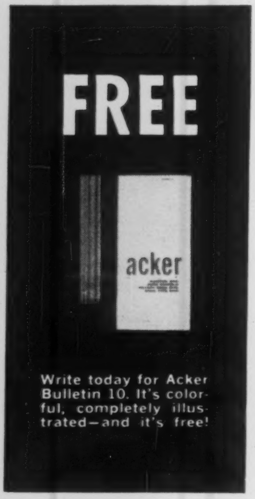
Top quality, selected stones are set by craftsmen in Acker's own modern plant. Painstaking inspections assure quality control. Backed by forty years' experience in drilling design and development, superior quality is bound to result.

But you don't have to take our word for it! Acker diamond bits are proving themselves in the field. See for yourself. Try Acker on your next job!



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Obituaries

J. J. Gould Dies; Designer Of Many Western Buildings

John J. Gould, 63, partner in the San Francisco consulting engineering firm, Gould & Degenkolb, died of a heart attack Jan. 30.

A native of Switzerland, Mr. Gould was a graduate of the Engineering School of Zurich. He came to the U. S. in 1923, and after two years in New York working for consulting engineers and contractors, he transferred to California. There, he was the design engineer in charge of the office of L. H. Nishkian, consulting engineer, and later a structural engineer for the state.

In 1935, Mr. Gould became chief structural engineer for the San Francisco Bay Exposition. He was in charge of the structural features of both the temporary Fair and permanent construction on Treasure Island.

Mr. Gould opened a consulting engineering office in 1940. By 1956, his firm had designed over $250 million worth of construction, mostly buildings. H. J. Degenkolb became his partner in 1956

Clarence Decatur Howe, 75, a consulting engineer who became Canada's wartime Deputy Prime Minister and for 22 years a member of the cabinet. Although a native of Waltham, Mass. and educated at Massachusetts Institute of Technology, he spent his entire career in Canada. In 1935, he interrupted a highly successful career as a grain elevator designer to enter public service as minister of railways and canals. Later as Minister of Transport he established Transcanada Airlines and the National Harbor Board. He received most of Canada's top engineering awards for his part in guiding the wartime growth in Canada's economy.

Erling Owre, 84, Norwegian-born architect noted chiefly for his work with architectural features of tunnels. As an associate of Singstad & Baillie, New York City, he was chief architect for the Holland, Queens-Midtown and Brooklyn-Battery tunnels in New York City, the Boston and Baltimore Harbor tunnels and the New River Tunnel at Ft. Lauderdale, Fla.

Maurice X. C. Weinberger, 80, senior partner in the consulting structural engineering firm of Weinberger, Frieman, Leichtman & Quinn in New York City. He did the structural engineering work on the present Madison Square Garden and many Loew's theaters.

Steel sheet piling in new river lock at Minneapolis

More than 3,000 tons of Bethlehem steel sheet piling were used in the construction of the new St. Anthony Upper Lock in the Mississippi River at Minneapolis. Part of the general construction of the city's upper harbor, the lock will provide a 50-ft lift for river craft. A lower lock and dam, already completed, provide a 25-ft lift.

The project is a joint venture of Al Johnson Construction Company of Minneapolis and Peter Kiewit Son's Company of Omaha, Nebraska.

for Strength . . . Economy . . . Versatility

Looking upstream at the excavations for the new St. Anthony Upper Lock, Minneapolis. Bethlehem supplied over 3,000 tons of piling.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. *Export Sales: Bethlehem Steel Export Corporation*

BETHLEHEM STEEL

NEW WHITE TANDEMS NEW LOW PRICES

An all-new concept in economy-design, these big new White 4200S Series construction models are especially engineered to solve the problem of rising operational costs and to provide maximum payload ability.

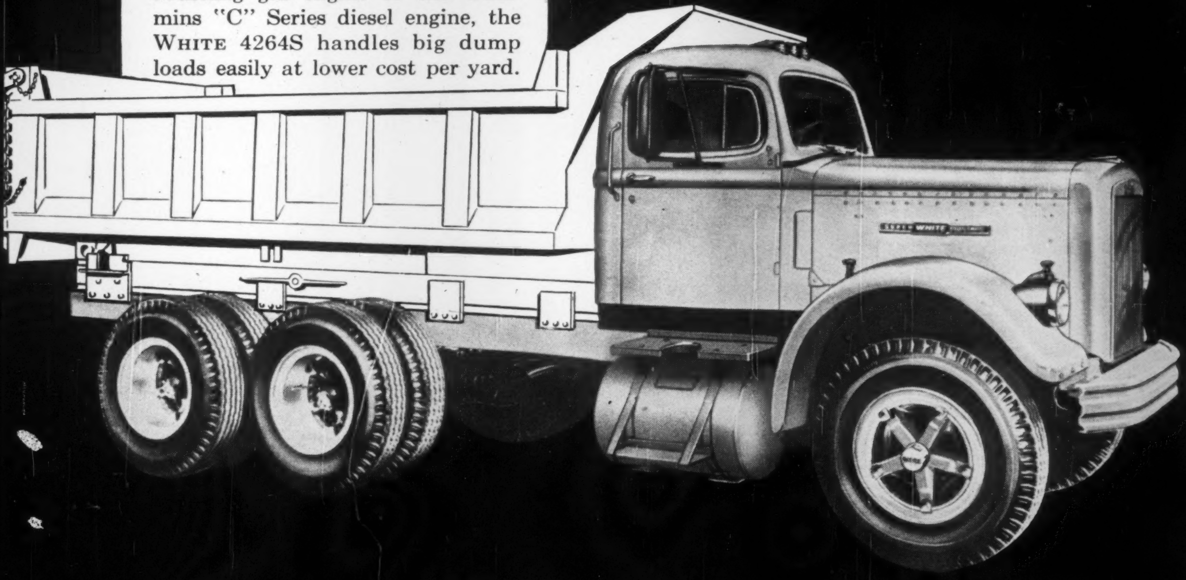
Lighter in weight yet rugged all the way through with high-strength, heat-treated alloy steel frame, quality nut and bolt construction, and extra capacity drive components. Built to handle the toughest jobs with less down time, lower operating and maintenance costs. And at a lower price than ever!

These new White construction models are the biggest heavy-duty truck values on the market. *Built to your exact operating requirements.* Designed to give you the competitive edge you need to lower your costs—increase your profits—in '61. Call your White branch or distributor!

The White Motor Company,
Cleveland 1, Ohio

Branches, distributors, dealers in all principal cities

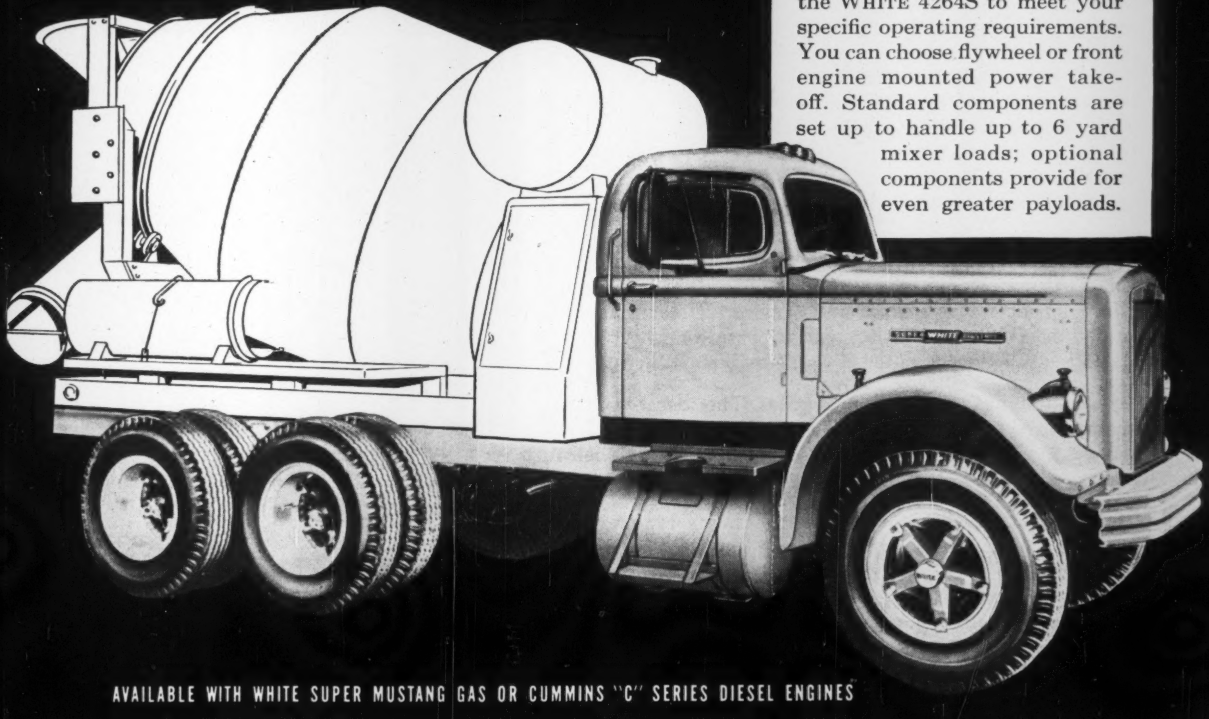
Powered by the job-proven Super Mustang gas engine or the Cummins "C" Series diesel engine, the White 4264S handles big dump loads easily at lower cost per yard.



WORLD LEADER IN HEAVY DUTY TRUCKS

WHITE

Flexibility in selection of components permits you to tailor the White 4264S to meet your specific operating requirements. You can choose flywheel or front engine mounted power take-off. Standard components are set up to handle up to 6 yard mixer loads; optional components provide for even greater payloads.



AVAILABLE WITH WHITE SUPER MUSTANG GAS OR CUMMINS "C" SERIES DIESEL ENGINES

Three County Commissioners from Ohio report:

“For economy and performance, Transite Water Pipe is still our main choice.”

Belmont County, Ohio, Commissioners William H. Dorsey, Austin C. Furbee and Louis T. Salvador.

“Belmont was one of the many counties that experienced a building and population boom. Fortunately, our officials had the foresight to recognize its ultimate effect on our water system and service. As early as 1953, plans were made to meet future demands. Surveys were made . . . operating men and engineers were consulted . . . pipe materials investigated.

“In 1956, we extended our water system 13 miles. The installation and operating economies are now a matter of record. The successful performance of the extension is attributed to careful planning, helpful advice and, in part, to the selection of Transite Pipe.

“When we began designing another expansion of the system for 1960, our previous experience made Transite the main choice. The Belmont Water System now has 53 miles of Transite installed in rocky terrain and corrosive soils. The excellent performance of the first 13-mile section leads us to believe that Transite will provide economical maintenance and operation for many years.”

For the full Transite® story, write Johns-Manville, Box 14, EN-2, New York 16, N. Y. In Canada: Port Credit, Ontario. Cable address: Johnmanvil.

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JOHNS-MANVILLE
TRANSITE PIPE
THE WHITE PIPE THAT PROTECTS PRICELESS WATER

Materials Prices

Monthly Market Quotations by ENR Field Reporters

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. carload lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.* truckload del.* per block		CONCRETE Ready Mixed 1:2:4 del. per cy 50 cy & over
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	
Atlanta‡‡	$4.30a‡	$3.80a‡	$3.62a‡	$2.25s‡	$2.50‡	$2.00‡s	$3.05	$3.05s	$3.90r	$3.90r	$0.19o	$0.22o	$13.00g
Baltimore	4.42a	3.91a	3.56a	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	.18a	.18a	13.50ou
Birmingham	4.43c	3.50cj	...	2.53ns	2.53ns	2.13ns	2.75s	2.75s	1.65d	1.75d	.19	.19	14.75q
Boston	5.83ip	4.53ap	4.90imp	3.00qsz	3.00qsz	3.00qsz	1.75qsz	1.85qsz	....	....	.23o	.275ao	15.00q
Chicago	4.52ag	4.02ag	4.15g	3.78‡e	3.78‡be	4.13‡be	3.95‡be	3.95‡be	2.25‡e	2.25‡e	.26‡e	.26‡be	14.50et
Cincinnati	4.84c	4.34c	4.31c	2.29‡cu	2.34‡cu	2.44‡cu	2.55‡cu	2.74‡cu	1.80u	1.80u	.19o	.25ao	15.00qr
Cleveland	4.77	....	4.19‡ae	....	2.25ae	1.75ae	2.70fy	2.70fy	2.30‡	2.30‡	....	.23f	17.25u
Dallas	3.90a	3.40a	3.78a	2.65‡a	2.75‡a	1.90‡	2.47	2.67			....	.285	11.10z
Denver	4.89a	4.39a	4.89	1.95‡	2.15‡	1.42‡b	....	3.00‡r	....	....	.25	.27ao	11.90
Detroit	4.24a	3.91age	3.29av	2.50cc	2.50cc	2.16cc	2.80ddbm	2.80ddbm	3.15ddaa	3.50ddagaa	.24u	.27‡au	15.50eaa
Kansas City	4.52a	3.97a	4.30a	....	....	1.70‡a	2.10‡a	2.10‡a	....	....	.22c	.27c	13.50
Los Angeles#‡	5.12ch	4.68ch	5.60c	2.56‡al	2.76‡al	2.41‡al	2.41‡al	2.46‡al	....	....	.175	.25	12.46hlx
Minneapolis	4.68a	4.17a	4.26a	2.70‡ae	2.70‡ae	1.60‡ae	4.00‡ae	4.00‡ae	....	....	.20q	....	14.55
Montreal	3.36‡de†	3.11‡de†	3.72‡de†	1.90‡a†	2.15‡a†	2.40‡a	1.90‡†	2.15‡†	2.00†	2.00†	.20†	.28t†	10.80ek†
New Orleans	4.17b	3.65b	3.97b	2.61b	2.61b	2.16b	....	....	1.65d	1.75d	.25r	.25	14.00o
New York	4.71a	4.20a	3.77a		3.20bk	2.30bkw	2.85blbb	2.85blbb	....	....	.265nwo	.32bwo	17.60ay
Philadelphia	4.51‡ae	4.01‡ae	3.63‡e	1.95‡a	1.95‡a	1.55‡a	2.00‡a	2.30‡a	2.25‡a	2.25‡a	....	.20w	13.90z
Pittsburgh	5.65bjk	4.62bj	5.00bjl	2.68‡aqr	2.68‡aqr	3.08‡aqr	2.00‡aqr	2.00‡aqr	2.10w	2.10w	.22rz	.22rz	16.15o
St. Louis##	4.59a	4.09a	4.29a	3.40‡as	3.40‡as	2.40/3.40‡as	1.75js	1.75js	....	....	.26‡o	.32‡co	13.65/14.10q
San Francisco	4.42c	3.85c	4.86c	2.02	2.02	2.12	2.17	2.17	....	....	.24	.28cl	13.00cw
Seattle	4.47‡a	3.75ag	4.65a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm	....	....	.288s	.384cs	14.70j
Toronto	4.20ui	3.84t	4.20ui	2.40	2.40	2.05	2.40	2.40	2.40	2.40	.26	.30cu	13.75q

‡ Delivered. * Prices incl. dealers discount except as noted. # Add 4% sales tax. ## Add 2% intrastate sales tax. † Plus 6% Mun & Prov tax. ‡‡ Add 3% state sales tax.

CEMENT: *a Less 10¢ disc. 15 days. *b Less 2% disc. 15 days. *c Less 10¢ disc. 10 days. *d 10¢ disc. 20 days. *e Truckload lots. *f Fob mill, add $14.58 to $21.31 per car switching charges. *g fob mill + freight. *h LCL. *i Less 2% disc. 10 days. *j Truck lots, fob yard. *k 100 bag lots. *l over 150 sacks. *m Sold in bags only. *n Less 5% disc. 30 days. *o Plus 50¢ for Sat. del. *p 5-8 ton truckload. *q F.o.b. mill *s In bags & bbl. Only *t min. 7 tons *u 200-bag lots *v one-line haul.

SAND, GRAVEL, STONE & SLAG: *a Truck lots. *b Per cu. yd. *c 5 tons up. *d Less 5¢ disc. 10 days. *e Less 2% disc. 10th. *f Less 2% disc. 15th. *g Less 5% for cash. *h Less than 5 tons. *j F.o.b. quarry. *k Barge lots asd. *l F.o.b. scow Hudson river. *m Less 2% for cash. *n F.o.b. cars. *q F.o.b. yard. *r less 5% disc. 15th. *s Less 2% disc. 10 days. *t Less 10¢ disc. 10 days. *u Less 5¢ disc. 10 days *v Less 2% disc. 15 days. *w Less 10¢ disc. 15 days. *x Incl. 35¢ switch. charge. *y F.o.b. dock. *z 5-8 tons. *aa Less 5% disc. 15 days. *bb Less 2% 25th of month *cc F.o.b. plant cl *dd F.o.b. plant.

CONCRETE BLOCK: *a Cinder. *b Waylite. *c Haydite. *d Celocrete, *e 5¼ x 8 x 12 in. *f 8 x 4 x 16. *g F.o.b. truck at job. *l F.o.b. plant San Rafael. *m F.o.b. yard. *n 8 x 8 x 18. *o Less 2% disc. 10 days. *p Less 2% disc. 10th. *q Less 5% disc. 10th. *r Less 2% disc. 15 days. *s Less 2% disc. cash. *t Siporex, 7 x 8 x 18. *u Less 5% disc. 10 days. *v Less 12% disc. 15th. *w Made to order.

READY MIXED CONCRETE: *a 6 cu yd or over del. Man. *b 25 cu yds or more *c 10–100 cy. *d 1–3 mi. zone add 15¢ for ea. add'l 1-mi. zone. *e 3,000 lb comp *f 2,500 lb. comp., less 5% disc. 30 days. *g Less 25¢ disc. 15 days. *h Less 50¢ for cash. *i 5% off for cash. *j 2% off for cash. *k Federal tax included. Add 6% mun. & prov. tax. *l 1:2½:3½ base price. *m F.o.b. yard. *n Plus escalator clause. *o Less 2% disc. 15 days. *p Less 50¢ disc. 15 days. *q Less 2% disc. 10 days. Add 50¢ per zone. *r 2000 wgt. *s Less 5% disc. 10 days. *t Incl. 50¢ heating. *u Less 2% disc. 15th. *v Sat. del.+50¢. *w 10-100 cy. *x Del in zone 20-B. *y less 25¢, 10 days. *z less 1% in 30 days. *aa 6 bag mix

CURRENT MAXIMUM PRICES AT CEMENT MILLS: Subject to 10¢ discount, 15 days. For paper bags add 50¢ per bbl., not refundable. *Prices guaranteed through December 31, 1961*

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.55	Buffington, Ind	$3.55	Steelton, Minn	$3.60	Muskegon, Mich	$3.55	Toledo, O	$3.60
Clinchfield, Ga	3.55	Independence, Kan	3.35	Leeds, Ala	3.40	Saginaw, Mich	3.60	Milwaukee, Wis	3.60
Kingsport, Tenn	3.55	Hannibal, Mo	3.55	Duluth, Minn	3.60	Wyandotte, Mich	3.60	Green Bay, Wis	3.60
West Des Moines, Iowa	3.65	Northampton, Pa	3.50	Hudson, N. Y.	3.50	Buffalo, N. Y	3.55	Ironton, O	3.65
Nazareth, Pa	3.50	Universal, Pa	3.60	Alpena, Mich	3.50	Oswego, N. Y	3.60	Montreal, Can a	2.81
Bath, Pa	3.50	Waco, Tex. (+ 10¢ tax)	3.35	Detroit, Mich	3.60	Cleveland, O	3.65	W. Winfield, Pa	3.60
Lesley, Pa	3.50	Giant, S. C	3.55	Howes Cave, N. Y	3.50	Alsen, N. Y.	3.50	Security, Md	3.50

*a 280 lb. bbl.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	e	e	e	$0.1182w	$0.1220w	$0.1182w	$0.1220w	$0.1222w	$0.1258w	$......	$0.1288w	$0.1327w
Baltimore	e	e	e	21.00i		.09	0.18	.09iwE	.18iwE	.095	.10i	0.19i
Birmingham	......	66.00i	......	25.12	25.69O	.1069	0.1093O	.1162w	.1188Ow	.1006O	.1069	0.1093O
Boston	......	......	......	22.00apS	46.00apS	22.00avS	46.00avS	.105awF	.22awF	.14aOR	.15OR	......
Chicago	150.00‡a	95.00‡ab	3.95/4.00‡aj	22.00b	32.00b	20.40bv	30.40bv	.10bwH	.18bwH	.08b	......	......
Cincinnati	......	......	......	24.00SU	......	24.00ff	......	.1165wSU	......	.109	.1265	......
Cleveland	......	89.50‡d	6.30	26.00tA	......	26.00tvA	......	.1165twAF	......	......	.1265tA	.21A
Dallas	e	40/80p	e	26.90	46.35	.1138	.1983	30.50	52.45	.1100	.1138	.1983
Denver	......	62.00a	......	......	......	......	......	......	......	......	......	......
Detroit	......	114.00	......	31.50R	......	32.20vR	......	30.24wIR	......	27.84	....	.24
Kansas City	e	e	e	18.75cl	......	18.75cl	......	.0875J	......	.0675c	0.10	......
Los Angeles#	e	e	e	19.00dmx	......	19.00dvx	......	20.50dKx	......	19.50dvaa	21.40iXv	.1842jXv
Minneapolis	......	......	3.73h	23.70	......	23.70v	......	.105w	......	0.95	.1375bb	..
Montreal	e	e	e	30.50n	43.60n	.167n	.211n	17.80nuE	22.20nuE	.155n	.242n	.27nX
New Orleans	e	e	e	20.00e	......	20.00ev	......	.095ew	......	.085eB	.095eBL	.1905eB
New York	......	......	3.70f	22.99mO	67.83mO	22.99vtO	67.83vtO	10.61uF	29.62uF	......	10.15u	29.81u
Philadelphia	......	......	......	22.00US	......	22.00US	......	.10UwS	......	.095US	......	......
Pittsburgh	60.00k	95.00n	6.35n	31.20is	......	31.20isv	......	.1403‡S	......	.14‡S	.1403i	..
St Louis##	......	......	......	19.74f	21.65	.1825f	.1825	.09fw	.092fw	0.165f	.1825O	.30R
San Francisco	......	70.00	......	22.50gdd	41.00gdd	22.50gkvdd	40.00gkvdd	22.50gNdd	46.50gNdd	23.25gvWdd	23.50gvXdd	.2023gXdd
Seattle	......	......	......	24.00z	47.00h	33.00vzcc	38.50	25.50KE	......	28.75hvY	25.80hvX	49.80hrvX
Toronto	......	120.00f‡	4.50f	38.90	59.01ee	0.2075	0.2773ee	0.222w	0.2704wee	0.233	0.212Zee	.268Zee

‡ Delivered. # Add 4% sales tax. ## Add 2% intrastate sales tax. R Revised.

PAVING BRICK & BLOCK: *a Less 2% disc. 10th. *b 3 x 3¾ x 8. *c 2¼ x 8¼ x 4. *d Truckload lots. *e Not used. *f 2" interior 6 lb tr. *g Less $1/Mdisc. 15th. *h 2" tr, 8 lb. *i 3 x 3⅝ x 8½. *j 2½", 6 lb. tr. *k Used. *l Redshale. *m Pine oak $6.57. *n Truck del. *o Less $1/M disc. 15 days. *p Used: $40; new: $80.

ASPHALTS: *a F.o.b. refinery, Everett, Mass. *b F.o.b. refinery, Lockport, Ill. *c F.o.b. Sugar Creek, Mo. *d F.o.b. refinery, El Segundo. *e F.o.b. Baton Rouge. *f F.o.b. Hartford, Ill. *g F.o.b. refinery, Richmond, Calif. *h F.o.b. Martinez. *i F.o.b. refinery, Baltimore. *j F.o.b. refinery, Inglewood, Calif. *k 50–110 'penetr. *l Less than 100 penetr. *m 40/300 penetr. *n F.o.b. refinery, Montreal. Fed. tax included; add 6% for mun. & prov. *o Drums not avail. Shipped in steel bbl. *p 60/70 penetr. *r In customer's drums. *s Shipped in drums, per drum. *t 150/300 penetr. *u Per 100 gal. *v Per ton. *w Per gal. *x Also tank trucks *y F.o.b. Oakland. *z F.o.b. Edmonds. *A F.o.b. refinery, Cleveland, *B F.o.b. Destrehan, La. *E RC. *F Also RC. *G Also MS *H RC 0–5 incl. *I MC 4. *J MC, RC $0.095. *K MC 3, 4, & 5. *L MS. *M MC 1–5, RC 1–5, $0.0918. *N MC 3. *O Truckload. *P F.o.b. refinery, Atlanta. *Q F.o.b. Eldorado, Ark. *R Delivered within 50 mi. *S Less 2% disc. 10 days, net 30. *T Less 1% disc. 10 days. *U F.o.b. refinery. *V Less 2% disc. 15 days. *W SC 2. *X RS 1. *Y SC 1. *Z Incl. 10% Sales Tax. *aa SC 3, 4, & 5. *bb RS 3. *cc In used drums. *dd less disc of $1 ton. ee 45 Imp. gal. drums *ff 60-150 penetration

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Jan. 19: Next, Feb. 23.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Jan. 26: Next, Mar. 2.
- Wage Rates Building Board Insulation: Last, Feb. 2: Next, Mar. 2.
- Iron & Steel Products, Pipe: Last, Jan. 12: Next, Feb. 16.

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Needham**—BA 2/15—Firestone Corp., Real Estate Div., Firestone Parkway, Akron, O., (selected list bidders) WAREHOUSE. $1,250,000.

▲ **Mass., Attleboro**—BA 2/23—City Housing Auth., 37 Carlon St., State Aided 667-1, HOUSING FOR THE ELDERLY. $1,000,000. Plans deposit $50. S. S. Eisenberg, 739 Boylston St., Boston, Mass., archt. CD 12/1/59.

▲ **Mass., Somerville**—BA 2/24—City Housing Auth., 30 Memorial Rd., PHA Mass. 31-3, HOUSING FOR THE ELDERLY, corner Greenville St. and McFrath Hy. $1,000,000. Plans deposit $100. Robert Charles Assoc., 73 Tremont St., Boston, Mass., engrs. CD 9/23/59.

HEAVY CONSTRUCTION—LB & CA

▲ **VERMONT**—Dpt. Hys., State Office Bldg., Montpelier, Bids opened Jan. 13 (ROADS),

Vt.—**Caledonia Sand & Gravel Co., Inc.**, Box 138, St. Johnsbury, Vt., and **Miller Constr. Co.**, Ascutney Blvd., Windsor, Vt., CA **$1,175,143**, est. $1,170,000, highway and bridge, Rte. 103, Proj. F-025-1(8), Chester (Gassetts). CA 1/17/61. CD 1/18/61, under LB.

BUILDINGS—LB & CA

▲ **St. Paul Constr. Co.**, 1440 Beacon St., Brookline, Mass., CA Total Cost $35,000,000, First Year $6,000,000 (2-4 Year Project), RESEARCH PARK and OFFICE, Rte. 128, LEXINGTON, MASS. Lexington Land Trust c/o Contractor.

▲ **Gerald Spear**, c/o Munson & Mallis, archts., 6 Frost St., Springfield, Mass. Owner Builds $2,400,000 Crossroads SHOPPING CENTER, SPRINGFIELD, MASS.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **Del., Lewes**—BA 2/27—Bd. Pub. Wks., 129 Second St., Proj. No. WPC-Del.-4, Schedule A, Sanitary Sewerage System, intercepting sewers, sewage pumping stations, force mains sewage treatment plant, outfall sewer; Schedule B, sub-main and lateral sewers, incl. house connections. Plans deposit $50. Clarke Gardner, & Percy Sterling, Calvert & Bond Sts., Salisbury, Md., consult. engrs. CD 3/20/57.

BUILDINGS—BA

N. J., New Brunswick—BA 2/28—State University, Office Vice Pres. & Treasurer, Rm. 101, Queens Bldg., Rutgers, New Brunswick, general contract, structural steel, misc. metal work, heating, ventilating and air-conditioning, plumbing and drainage and electrical work MANAGEMENT and LABOR RELATIONS BLDG., Rutgers State University. Plans deposit $45. Edwards & Green, 17 S. Fifth St., Camden, N. J., archts.-engrs. CD 7/2/59.

HEAVY CONSTRUCTION—LB & CA

▲ **P. J. Carlin Constr. Co.**, 41-17 Crescent St., Long Island City, N. Y. and **Thomas Crimmins Contracting Co.**, 624 Madison Ave., New York, N. Y., CA **$12,368,979**, Contr. Q 99-660, SPORTS STADIUM, Flushing Meadow Park, Grand Central Parkway, 126 St., Northern Blvd. and Roosevelt Ave., Queens Boro, FLUSHING, N. Y. Comr. Parks, Arsenal Bldg., Central Park, E. 63 St. and 5 Ave., New York 21, N. Y. BA 1/24. Grand total $16,157,779. CD 1/26, under LB;

Nager Electrical Co., Inc., 428 Broadway, Brooklyn, N. Y., CA **$1,798,000**, Contr. Q 99-760, electrical work, Sports Stadium, Queens Boro (Flushing, N. Y.); **Astrove Plumbing & Heating Co.**, 36-14 32 St., Long Island City, N. Y., CA **$621,800**, Contr. Q 99-960, plumbing, Sports Stadium, Queens Boro (Flushing, N. Y.);

Otis Elevator Co., 260 11 Ave., New York, N. Y., CA **$1,369,000**, Contr. Q 99-1060, elevators and moving stairs, Sports Stadium, Queens Boro (Flushing, N. Y.).

Tully & Di Napoli, Inc., 127-50 Northern Blvd., Corona, N. Y., LB **$950,000**, (9 bidders), PLATFORM EXTENSIONS to elevated stations, N. Y. C. T. S., IRT Div., Group XIX, Contr. C-142, Bronx Boro, NEW YORK, N. Y. New York City Transit Auth., Rm. 1310, 370 Jay St., Brooklyn 1, N. Y. BA 1/27. CD 1/4.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, bids opened 1/26, BRIDGE,

Poirier & McLane Corp., 33 West 42 St., New York, N. Y., LB **$3,745,206**, (12 bidders), overpass viaduct Rte. 95, Section IH from 680 ft. west Northern RR of New Jersey to Grand Ave., City of Englewood, Leonia Boro. FP No. NJ I-95-7(11) 64, Bergen Co. CD 1/9.

▲ **Elmhurst Contracting, Div. John Hagan & Sons, Inc.**, 53-09 97 Pl., Corona, N. Y., LB **$7,347,772**, (3 bidders), DAM, Spruce Run Reservoir, Clinton and Flemington, Hunterdon Co., NEW JERSEY. New Jersey Dpt. Conservation and Economic Development, First Floor, 205 West State St., Trenton, N. J. BA 1/24. CD 12/20.

BUILDINGS—LB & CA

▲ **Joseph P. Blitz, Inc.**, 545 Madison Ave., New York 22, N. Y., LB **$5,066,000** (5 bidders), fdns. and general contract James Madison HOUSES, Proj. No. NY-5-33, E. 110 St., Park Ave., E. 109 St. and Madison Ave. and E. 108 St., Park Ave., E. 107 St. and Madison Ave., Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., Rm. 312, 299 Broadway, New York 7, N. Y. BA 1/31. CD 1/26.

H. Sands & Co., 11 Park Pl., New York 7, N. Y., LB **$549,700** (4 bidders), heating and ventilating, James Madison Houses, Manhattan Boro (New York, N. Y.).

ARC Electrical Constr. Co., Inc., 739 Second Ave., New York 16, N. Y., LB **$478,400** (5 bidders), electrical work, James Madison Houses, Manhattan Boro (New York, N. Y.).

Endres Plumbing Corp., 31-65 29 St., Long Island City 6, N. Y., LB **$723,100**, (4 bidders), plumbing, James Madison Houses, Manhattan Boro (New York, N. Y.).

▲ **Rheinstein Constr. Co. Inc.**, 21 E. 40 St., New York 17, N. Y., CA est. **$4,000,000**, 2 story 250,000 sq. ft. DEPARTMENT STORE, Old Country Rd., ROOSEVELT, N. Y. Roosevelt Field, Inc., c/o Webb & Knapp, Inc., 333 Madison Ave., New York 17, N. Y. Ammann & Whitney, 111 8 Ave., New York, N. Y., Welton, Becket & Assocs., 11 W. 42 St., New York, N. Y., Copeland, Novak & Israel, 744 Lexington Ave., New York, N. Y., archts. Gimbel Bros. lessee. CD 1/19/59.

▲ **Electronic & Missiles Facility, Inc.**, 2 Lafayette St., New York, Zone 17, N. Y., LB **$5,735,000** (8 bidders), 4 story FEDERAL COURTHOUSE ADDN. and post office remodeling, PHILA., PA. General Services Admin., 250 Hudson St., New York, N. Y. BA 1/31/61. CD 1/24/61.

▲ **Air Reduction Sales Co.**, 150 E. 42nd St., New York, N. Y., CA Est. **$5,000,000**, oxygen PLANT, JOHNSTOWN, PA. Bethlehem Steel Co., Bethlehem, Pa.

▲ **Navarro Corp.**, 6219 Broad St., Pittsburgh, Pa., CA **$3,000,000**, 22 story, steel frame, glass, 160 units APARTMENT, PITTSBURGH, PA. Behrman & Passell, 552 N. Neville St., Pittsburgh, Pa. Tasso G. Katselas, 3504 Fifth Ave., Pittsburgh, Pa., archt.

▲ **Gunnell Construction Co., Inc.**, Tower Bldg., Wash., D. C., CA **$2,058,500**, Bertie Backus Junior High SCHOOL, South Dakota Ave. & Hamilton St. N.E., WASH., D. C. D. C. Govt., Dpt. of Buildings & Grounds, 499 Pennsylvania Ave. N.W., Wash., D. C. BA 1/19/61. CD 1/24/61, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

▲† **Louisiana**—BA 3/1—U. S. Eng., foot of Prytania St., New Orleans, DREDGING 36x260 ft. Interim Channel from Sta. 2049 plus 40 to Sta. 2270 plus 00, Mississippi River-Gulf Outlet, St. Bernard Parish, CIVENG-16-047-61-114. $1,500,000. Plans deposit $1. CD 9/20/60.

▲† **Florida**—BA About 3/7—U. S. Eng., P.O. Box 4970, Jacksonville, DREDGING 9 ft. Tampa Bay to Anclote River, Intercoastal Waterway, Caloosahatchee River to Anclote River, Pinellas Co., Fla., from St. Petersburg Harbor Entrance Channel Tampa Bay to Anclote River Channel, between mainland and chain of offshore islands, CIVENG-08-123-61-52. $1,500,000. CD 11/24/43.

▲† **Fla., Homestead**—BA 3/8—U. S. Eng., Box 4970, Jacksonville, RUNWAY, taxiway, and apron paving, Hazard removal, ILS outer marker and runway paving repairs, Homestead Air Force Base, ENG-08-123-61-51. $4,500,000. Plans deposit $10. CD 1/30/61.

BUILDINGS—BA

Ala., Huntsville—BA 2/21—City Bd. Education, State National Bank Bldg., Lee Junior High SCHOOL, $512,000. Plans deposit $25. Davis, Speake & Thrasher, 3004 7th Ave., S. Birmingham, Ala., archts. CD 1/19.

Ga., Atlanta—BA 2/21—Commercial Union Assurance Co. Ltd., 1437 W. Peachtree St., NW, OFFICE and Parking Deck addn., $750,000. Plans deposit $50. Stevens & Wilkinson, 157 Luckie St., NW, Atlanta, Ga., archts. CD 12/1/60.

▲† **Ga., Albany**—BA 3/14—Base Procurement Office, Turner Air Force Base, 430 Capehart HOUSING units, Turner Air Force Base, INV-09-629-61-39, $7,000,000. Plans deposit $100. James Wise, Simpson, Aiken & Assocs., 873 Spring St., NW, Atlanta, Ga., archts. CD 11/15/60.

HEAVY CONSTRUCTION—LB & CA

▲ **Preston W. Carroll Constr. Co.** P. O. Box 158, Clifton, Tenn., LB **$1,012,427**, (19 bidders), TRUNK LINES and accessories, CULLMAN, ALA. City, City Hall, Cullman, Ala., V. H. Padgett & Assocs., P. O. Box 491, Cullman, Ala., and Harry Hendon & Assocs., 10 Office Park Circle, Mountain Brook, Ala., engrs., BA 1/24/61. CD 12/28/60.
Bush Bldg. Co., 805 8th Ave., Nashville, Tenn., LB **$614,744**, (19 bidders), revamping sewage treatment plant, (Cullman, Ala.).

BUILDINGS—LB & CA

Doyle & Russell, Central National Bank Bldg., Richmond, Va., CA **$539,000**, OFFICE, Monument and Willow Lawn Aves., RICHMOND, VA. Baptist Bd. of Missions & Education, 5 W. Franklin St., Richmond, Va. CD 12/28/60, under LB.

▲ **McDevitt & Street Co.**, 145 Remount Rd., Charlotte, N. C., LB est. **$1,500,000**, 300,000 sq. ft. mfg. PLANT, CHARLOTTE, N. C. Lance Inc., 1300 S. Boulevard, Charlotte, N. C. BA 1/12. CD 12/2.

▲ **J. C. Stockton & Son**, 1316 Wilson St., Augusta, Ga., LB **$1,562,000**, (17 bidders), 1 story, 98,000 sq. ft. struct. steel and reinf. conc. brick exterior, INFIRMARY, GRACEWOOD, GA., State Health Dpt., State Office Bldg., Atlanta, Ga., Gregson & Assocs., Mortgage Guarantee Bldg., Atlanta, Ga., archts., BA 1/24/61. CD 1/13.

▲ **Newton & Rushton Construction Co.**, Inc., Box 191, Vidalia, Ga., LB **$2,479,000**, (11 bidders), 5 story 169,000 sq. ft. struct. steel, brick exterior, TREATMENT CENTER, State Mental Hospital, MILLEDGEVILLE GA., State Health Dpt., State Office Bldg., Atlanta, Ga., Gregson & Assocs., Mortgage Guarantee Bldg., Atlanta, Ga., archts., BA 1/24/61. CD 1/13.
Delta Construction Co., 1049 Albany Ave., Box 257, Waycross, Ga., LB **$1,218,000**, (14 bidders), 1 story, 86,000 sq. ft. Central Kitchen, State Hospital, (Milledgeville, Ga.).
Southern Construction Co., Inc., Box 1307, Augusta, Ga., LB **$899,000**, (20 bidders), 2 story, staff dormitory, and 2 story, 100 room, reinf-conc., red brick exterior, domitory, State Mental Hospital, (Milledgeville, Ga.).
Coite Somers, Vidalia, Ga., LB **$1,824,000**, (13 bidders), 6 story, 627 bed steel frame brick exterior, Hospital addn., State Mental Hospital, (Milledgeville, Ga.).

▲ **Robert M. Merritt, Inc.**, 260 NE 70th St., Miami, Fla., CA Est. **$1,600,000**, 160,000 sq. ft. Southwest SHOPPING CENTER, SW. 87th Ave. and Coral Way, MIAMI, FLA., Southwest Center Trust, c/o Contractor, Donald J. Reiff, Assocs., 1185 71st St., Miami, Beach, Fla., archts.

▲ **Southern Constr. Co.**, P. O. Box 1307, Augusta, Ga., LB Bid A **$1,165,585**, Bid B $1,164,035, 140 low rent HOUSING units, GREENVILLE, ALA., Greenville Housing Auth., Greenville, Ala., Pearson, Tittle & Narrows, First National Bank Bldg., Montgomery, Ala., archts., BA 1/25/61. CD 1/3.

▲ **Cab Lumber Co.**, 1812 1st Ave., N. Bessemer, Ala., CA **$1,525,000**, Men's RESIDENCE HALL, TUSCALOOSA, ALA., University of Alabama, P. O. Box 2017, Tuscaloosa, Ala., BA 1/21/61. CD 1/17/61, under LB.

▲ **Stearns-Rogers Mfg. Co.**, 660 Bannock St., Denver, Colo., CA est. **$5,000,000** manganese metal PLANT, ABERDEEN, MISS. American Potash & Chemical Co., 3000 W. 6 St., Los Angeles, Calif.

▲ **Vanderbilt University**, 21st. St., S., Nashville, Tenn., cancelled bids Feb. 16, 180,000 sq. ft. women's RESIDENCE QUADRANGLE, **$2,000,000**, NASHVILLE, TENN. Brush, Hutchinson & Gwinn, 1719 West End Bldg., Nashville, Tenn., archts. CD 1/10/61.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **O., Girard**—BA 3/6—City, City Hall, Contract No. 4, Market St. INTERCEPTING SEWER and plant trunk sewer, Contract No. 5, Big Squaw Creek intercepting sewer system, Contract No. 6, Little Squaw Creek intercepting sewer system, Contract No. 7, South intercepting sewer system, Plans deposit $10; Contract No. 2, SEWAGE TREATMENT PLANT, Plans deposit $25. Floyd G. Browne & Assocs., 125 W. Church St., Marion, consult. engrs. CD 10/3/58.

BUILDINGS—BA

▲ **Wis., Baraboo**—BA 3/1—St. Mary's Ringling Hospital, Baraboo, 3 story, bsmnt., 128,000 sq. ft. HOSPITAL, $1,200,000, Siberz, Purcell & Cuthbert, 1920 Monroe St., Madison, archts. CD 11/11.

HEAVY CONSTRUCTION—LB & CA

▲ **Wander & Mason, Inc.**, 1028 Proprietors St., Columbus, O., LB **$1,106,106** est. $1,300,000 (12 bidders) SEWAGE PLANT imprvs., MASSILLON, O. City, City Hall, Masillon, O. BA 1/25. CD 1/6.

▲ **Ciccone Bros. Co.**, 3558 W. Lake St., Chicago, Ill., CA **$1,346,851**, No. 80.82-60-33, Auxiliary OUTLET SEWERS, Blackhawk St. system, Contract 2, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. BA 12/20. CA 1/16. CD 12/28 under LB.

▲ **S. A. Healy Co.**, Box 11, McCook, Ill., CA **$1,346,146,** Contracts 2, 3, 4, and 6, STORM SEWERS, St. Joe Creek and Montgomery Ave., DOWNERS GROVE, ILL. Village, Village Hall, Downers Grove, Ill. BA 12/12. CA 1/16. CD 1/12, under LB.

▲ **Greenfield Constr. Co., Inc.**, 13040 Merriman Rd., Livonia, Mich., CA **$4,775,000** (8 bidders), PW-3074, Baby Creek SEWER ENCLOSURE, Industrial Hy. to Vernor, DETROIT, MICH. City, 528 City-County Bldg., Detroit 26, Mich. BA 12/20. CA 1/24. CD 11/10.

BUILDINGS—LB & CA

▲ **Saks & Goldberg Builders**, 6354 Pearl Rd., Cleveland 30, O., Owner builds **$3,000,000**, 150 brick trimmed RANCH HOMES, W. 220th and adjacent streets, Parkview, CLEVELAND, O.

▲ **Alvin Constr. Co.**, 18009 Holland Rd., Berea, O., Owner builds **$1,750,000** ($500,000 first year) 66 HOMES, Aldene Dr. and W. 152nd St., north of Puritas Rd. CLEVELAND, O. Arthur M. Hemlock, 10010 Euclid Ave., Cleveland 6, O., archt.

▲ **Elford Inc.**, 555 S. Front St., Columbus, O. CA Total Est. **$1,800,000,** 1 story, 83 x 119 ft. TELEPHONE BLDG. COLUMBUS, O. Ohio Bell Telephone Co., 35 E. Gay St., Columbus 15, O. Sims, Cornelius & Schooley, 2901 N. High St., Columbus, O., archts. CA 1/25.
S & S Electric Co., 4209 Kenny St., Columbus, O. CA electrical contract, TELEPHONE FACILITIES (Columbus, O.)
J. A. Guy, Inc., Dublin, O., CA, mechanical contract, TELEPHONE FACILITIES, (Columbus, O.)

▲ **John G. Johnson & Sons Constr. Co.**, 5767 Mayfield Rd., Cleveland, O. CA Total Est. **$1,000,000** ($350,000 for first unit) HILLCREST CLINIC, 6760 Mayfield Rd., MAYFIELD HEIGHTS, O. Doctors Clinic Foundations, 12900 Euclid Ave., Cleveland 6, O. Russell Ralph Peck, 2177 S. Taylor Rd., Cleveland 18, O., archt. CD 12/5/57.

▲ **Lloyds Constr. Co.**, 61 W. Superior St., Chicago, Ill., CA **$6,000,000**, 500 unit TWIN TOWERS APARTMENT, Hollywood Ave. and Sheridan Rd., CHICAGO ILL. United Insurance Co. of America, 1313 S. Michigan Ave. Chicago, Ill. CD 10/9/59 under O. T. Hogan & Assoc., as owners.

Engelhardt Inc., Rte. 176, Libertyville, Ill., CA **$450,000**, 69 x 145 ft. APARTMENTS AND STORES, 580 Bank Lane LAKE FOREST, ILL. Leander McCormick Estate, 11 E. Onwentsis St., Lake Forest, Ill. CD 9/9/60.

▲ **Campbell Lowrie Lautermilch Corp.**, 400 W. Madison St., Chicago, 6, Ill., CA **$1,000,000**, 100,000 sq. ft. FACTORY, PARIS, ILL. Zenith Radio Corp., 6001 W. Dickens Ave., Chicago, Ill. Shaw, Metz & Assocs., 208 S. LaSalle St., Chicago 4, Ill., archts. CD 10/20.

▲ **Carl J. Conradt & Sons**, 591 Main St., Hamilton, O., LB **$1,021,788**, (8 bidders), HIGH SCHOOL, READING, O. Bd. Educ., Reading, O. BA 1/25. CD 1/5.

▲ **S. N. Robbins Co.**, 4341 W. Peterson St., Chicago, Ill., CA **$3,650,000**, forty-one 2 story, 240 unit, Washington Park APARTMENTS, 17 sites CHICAGO, ILL. Chicago Housing Auth., 608 S. Dearborn St., Chicago 5, Ill. BA 1/17. CA 1/25. CD 1/11.
Telander Bros. Contractors, Inc., 8151 S. Western St., Chicago, Ill., CA **$2,359,000**, nineteen, 2 story, 138 unit Washington Park APARTMENTS, garage remodeling, for management, maintenance and community use (Chicago, Illl.).

▲ **L. J. Graf Constr. Co.**, 6327 N. Pulaski Rds., Chicago, Ill., CA **$1,000,000**, COLLEGE addn., Chicago Ave. campus, CHICAGO, ILL. Northwestern University, Evanston, Ill. BA 12/12. CA 1/24. CD 11/28.

▲ **Perini Corp.**, 73 Mt. Wayte Ave., Framingham, Mass., CA **$2,000,000**, 1 story, 85 x 185 ft., brick WAREHOUSE, OFFICE, railroad tracks, paving, Grand Ave. and Illinois Tollway, NORTHLAKE, ILL. International Paper Co., Parsipany Rd., Whippany, N. J.

▲ **Bryant & Detwiler Co.**, 2110 Penobscot Bldg., Detroit, Mich., CA total cost **$20,000,000**, 32 story OFFICE, Jefferson and Woodward Sts., DETROIT, MICH. Michigan Consolidated Gas Co., 415 Clifford St., Detroit 26, Mich. CD 1/26/58.

▲ **Leland Baum Co.**, 2510 W. Capitol Dr., Milwaukee, Wis. CA est. **$1,500,000** BOWLING CENTER, SOUTH MILWAUKEE, WIS. Consolidated Bowling Corp., 525 E. Michigan St., Milwaukee 2, Wis. CD 12/21.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲ **Minn., Bloomington (P. O. Minneapolis)**—BA 2/28—Metropolitan Sports Area Comn., 8001 Cedar Ave., STADIUM addn., 7800 Cedar Ave. Extended Date. $2,000,000. Cerny Assocs. Inc., 300 First National Concourse Bldg., Minneapolis, Minn., archts. CD 12/16.

▲ **Iowa, Sioux City**—BA 3/27—City, City Hall, INTERCEPTOR SEWERS Floyd River treatment plant, South Ravina Park, $1,000,000. Buell & Winter, Insurance Exchange Bldg., Sioux City and Howard R. Green Co., Green Engineering Bldg., Cedar Rapids, engrs. CD 10/5/59.

▲† **Texas**—BA About 4/13—U. S. Eng., 100 W. Vickery St., Fort Worth, McGee Bend Reservoir, Texas, Part I, Brookeland Levee and ROADS, Part II, State Hy. Imprvts., U.S. Hy. No. 96 and FM Hy. 705, ENG-41-443-6k-64. $1,500,000. CD 9/22/60.

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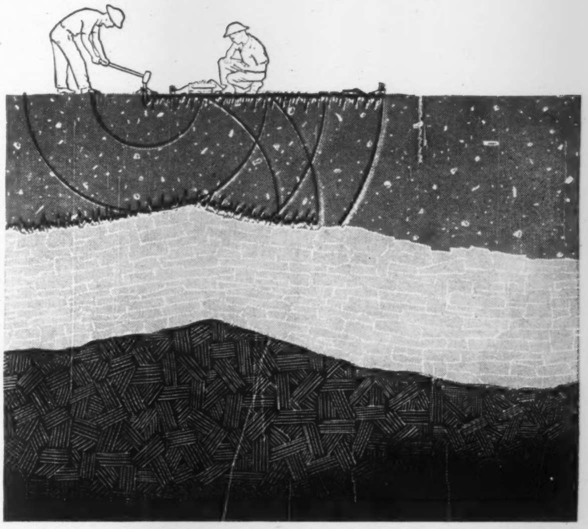

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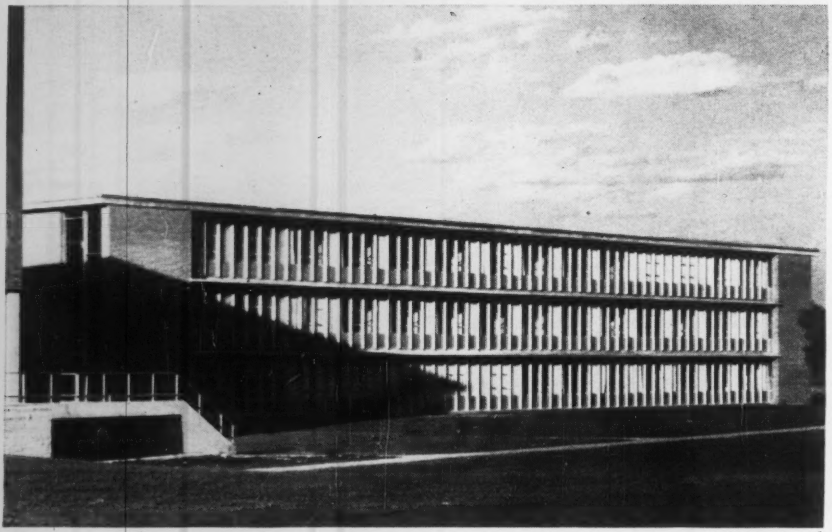
TRUSCON PRODUCTS



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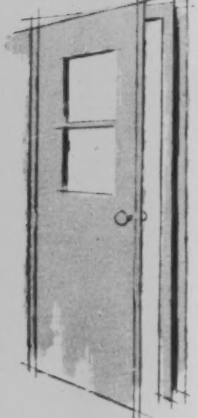
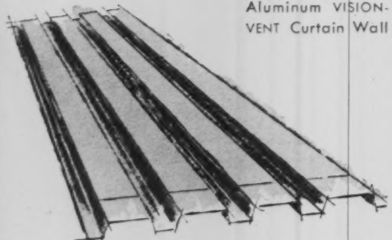
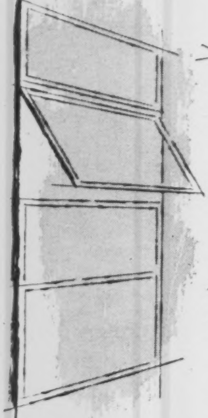


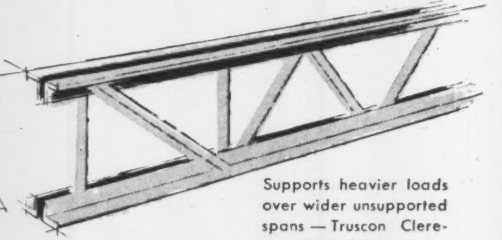
Truscon Maintenance-Free Hollow Metal Doors and Frames



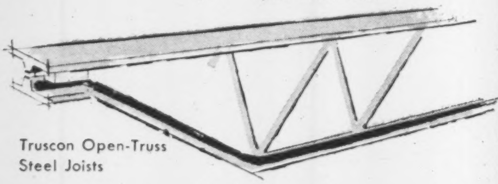
Truscon FERROBORD Roofdeck 24-inches wide—covers more roof area faster



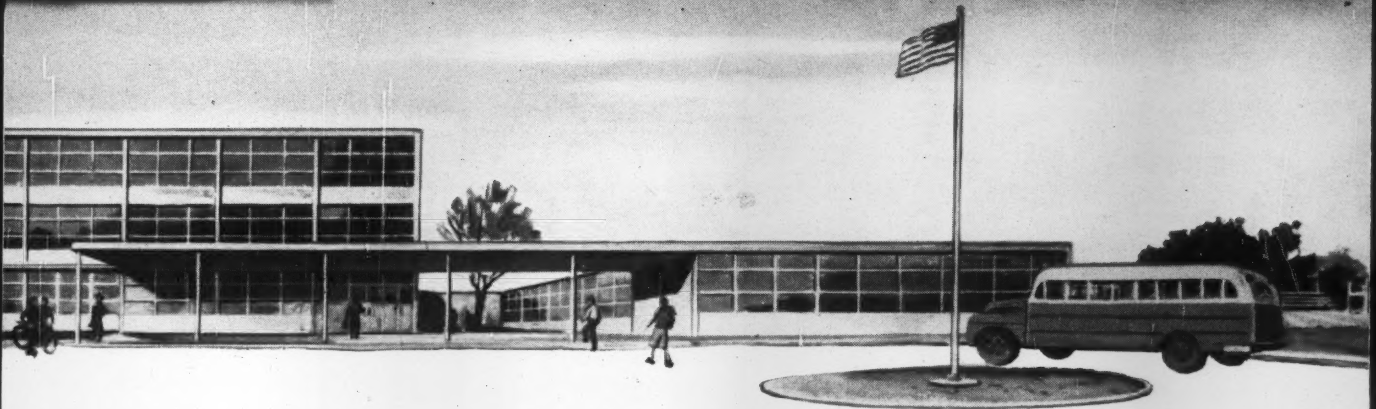
Truscon Lifetime Aluminum VISION-VENT Curtain Wall



Supports heavier loads over wider unsupported spans — Truscon Clerespan Steel Joists



Truscon Open-Truss Steel Joists



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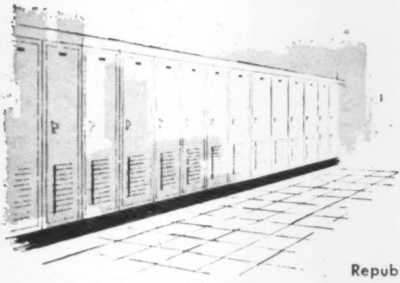
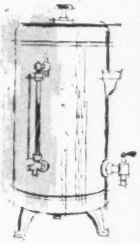


Republic Steel Lockers



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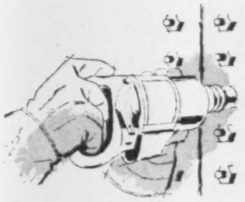

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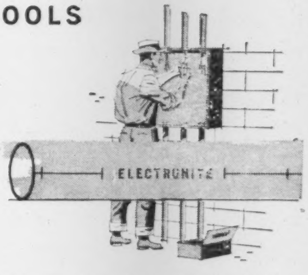

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Name____________Title____________
Firm____________
Address____________
City____________Zone______State____________

BUILDINGS—BA

▲ **Tex., Fort Worth**—BA 2/16—Texas Christian University, Campus, masonry, air conditioned COLISEUM, $1,450,000. Joseph R. Pelich, 1203 Trans American Life Bldg., archt. CD 6/21/60.

▲ **Tex., Houston**—BA 2/16—Rice Institute, 6100 Main St., Houston, Rayzor Hall DORMITORY, **$1,000,000.** Plans deposit $50. Staud, Rather & Howze, 2814 Virginia St., archts. Walter P. Moore, 2 Pinedale St., Houston, engr. CD 3/17/60.

▲ **Tex., Lubbock**—BA 2/16—City, City Hall, 2 story and basement, brick CITY HALL. $1,650,000. Plans deposit $50. DeWitt & Maeker, 1203 College St., Lubbock, archts. CD 6/23/60.

▲ **Mo., Hazelwood**—BA 2/23—Hazelwood School Dist. R-1, Parker Rd. near Old Hall's Ferry Rd. and Box G, 1 and 2 story ELEMENTARY SCHOOL, Charbonnier Rd. near Hy. 140, $625,000; 1 and 2 story ELEMENTARY SCHOOL, Redman and Old Hall's Ferry Rds., $700,000; SENIOR HIGH SCHOOL addn. Over $1,000,000. Kenneth E. Wischmeyer, 911 Locust St., St. Louis 1, Mo., archt. CD 1/11.

▲† **Tex., Kelly Air Force Base**—BA 2/28—Procurement & Production, SAAMA, Bldg. 43, Kelly Air Force Base, San Antonio, remodeling, 600 Bill Mitchell Village HOUSING UNITS, over $1,000,000. Plans deposit $150. Hession & May, Shipman & Associates, 148 Olmos Drive, San Antonio, archts.-engrs. CD 8/23/55.

▲ **Tex., El Paso**—BA 3/8—U. S. Post Office Dept., 12th & Pennsylvania Ave., N.W., Wash., D. C., 100,000 sq. ft., build and lease POST OFFICE and vehicle maintenance facility. Nesmith & Lane, 939 Sandhills Freeway, El Paso, Tex., archt.-engrs. CD 3/10/58.

HEAVY CONSTRUCTION—LB & CA

▲ **MINNESOTA**—State Hy. Dpt., Capitol Approach, St. Paul (ROADS),

Minn.—**L. Joyce**, 220½ 1st Ave. S. W., Rochester, Minn., CA **$1,194,535** grading and bridges 3.4 mi., Mower Co.,

Minn.—**G. A. Olson Constr. Co. Inc.**, 704 E. Main St., Marshall, Minn., CA **$828,447**, grading, gravel base and road mixed bit. base 16.7 mi. between Morris and 1.5 mi. W. of Starbuck, Pope and Stevens Counties;

Minn.—**Megarry Bros.**, 437 33 Ave. N., St. Cloud, Minn., CA **$1,407,682**, gravel base and c. conc. pavt. 6.9 mi. near Fergus Falls, Otter Tail Co. BA 1/20 Grand Total $3,430,665 CD 1/24 under LB.

▲ **R. W. Moore**, 1613 Ridgewood Lane, St. Paul, Minn., LB **$1,310,212** (8 bidders) 69,000 lin. ft. SANITARY SEWER LINE; 86,000 lin. ft. WATER MAIN, BLOOMINGTON (P. O. MINNEAPOLIS), MINN. City, 10200 Penn Ave. S., Bloomington, Minn. BA 1/27 CD 1/18.

▲† **B. L. Abbott Constr. Co.**, 2112 Addison Rd., Houston, Tex., LB **$3,847,508**, est. $5,028,415 (6 bidders) HOSPITAL, Sheppard Air Force Base, ENG-41-443-61-18, WICHITA FALLS, TEX. U. S. Eng., 100 W. Vickery, Fort Worth, Tex. BA 1/26/61. CD 12/29/60.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol 5, Oklahoma City, Bids opened 1/24 (ROADS),

Okla.—**Brooks & McConnell**, 5020 W. 16th St., Oklahoma City, 7, Okla., LB **$1,670,334**, est. $1,833,954 (10 bidders), c. conc. pavement 7.921 mi. 4-lane I 35 north of Hy. 15, Noble Co.; LB **$1,322,271**, est. $1,451,528 (10 bidders), c. conc. pavement 5.831 mi. I 35 north of US 60 near Tonkawa, Kay Co.; LB **$218,705**, est. $244,400 (6 bidders), stab. asph. base, single bit. surf. 7.496 mi. Hy. 92 south of Yukon, Canadian Co.;

Okla.—**Standard Industries, Inc.**, 2119 E. 11th St., Tulsa, Okla., LB **$1,428,511**, est. $1,586,129 (8 bidders), sand asph. base, b. conc. surf. 6.868 mi. I 35 north and west of Perry, Noble Co.; LB **$932,223**, est. $1,193,641 (6 bidders), stab. aggreg. base, b. conc. surf. 4.684 mi. US 75 south of Owasso, Tulsa Co.; LB **$335,751**, est. $343,302 (5 bidders), stab. aggreg. base, b. conc. surf. 3.856 mi. Hy. 7, east of Comanche line, Stephens Co.;

Okla.—**Ken Richardson Constr. Co.**, Box 748, Norman, Okla., LB **$201,587**, est. $215,307 (6 bidders), asph. stab. base, single bit. surf. 6.867 mi. on part of Hy. 114, Texas Co.; LB **$100,440**, est. $112,664 (6 bidders), asph. stab. base, double bit. surf. 3.685 mi. Hy. 114, Cimarron Co.;

Okla.—**Broce Constr. Co., Woodward, Okla.**, LB **$204,439**, est. $208,296 (6 bidders), soil asph. base, single bit. surf. 5.175 mi. State Hy. 6, south of Elk City, Beckham Co.;

Okla.—**Phoenix Constr. Co.**, -Mid States Bldg., Tulsa, Okla., LB **$228,964**, est. $273,964 (11 bidders), grading draining 2.514 mi. US 75 in and south of Okmulgee, Okmulgee Co. CD 1/9.

Johnson Constr. Co., 512 Catalpa St., Clarksdale, Miss., LB **$208,071**, est. $250,000 (4 bidders), 205 mi. TELEPHONE LINE and modifying 31 mi. existing line, Kinta, OKLAHOMA. Cross Telephone Co., Warner, Okla. BA 1/10. CD 12/22.

▲ **NEW MEXICO**—State Hwy. Comn., Cerrillos Rd., Santa Fe, bids 1/27, (ROADS),

N. M.—**Brown Constr. Co.**, 3535-4NW, Albuquerque, N. M., CA **$300,028**, 2 lane, grade, drain, 6 in. cement, treated base course, culing seal, one con. culvert, misc. constr. 5.189 mi., 11.8 mi., North of US 70-North, Federal Aid Proj. No. I-025-1(4)12, Dona Ana Co.;

N. M.—**Jack Adams Constr. Co.**, S. Galister Rd., Santa Fe, N. M., CA **$177,248**, frontage rds., Bernalillo-North and South, 1.788 mi. Federal Aid Proj. No. I-205-4(23), Sandoval Co.;

N. M.—**C. R. Davis Contracting Co.**, 1000 Manuel, Albuquerque, N. M., CA **$918,922**, 4 lane, grade, drain, cement treated base, conc. pvt., median divider, one major con. box culvert, traffic control and street lighting, 2.008 mi. Federal Aid Proj. No. F-003-3(15), Bernalillo Co.;

N. M.—**Armstrong & Armstrong**, S. of Roswell, Roswell, N. M., CA **$1,104,546**, 2 lane, grade, drain, subbase, 7.874 mi. Federal Aid Proj. No. F-021-2(6), Lincoln Co.;

N. M.—**Allison & Haney**, 1412 Broadway, NE, Albuquerque, N. M., CA **$338,211**, 2 lane, drain, grade, subbase, bit. type surf., 3.415 mi., Federal Aid Proj. No. FLHP-12(6), McKinley Co.;

N. M.—**Floyd Haake, Agua Fria**, Santa Fe, N. M., CA **$851,112**, constr. of 2 and 4 lane, grade, drain, cement treated base, course, surf., 5.564 mi. Federal Aid Proj. No. S-1226(4), Lincoln Co. Grand total $3,689,214. CD 1/13/61.

BUILDINGS—LB & CA

Southern Builders, Inc., 3355 Poplar Ave., Memphis, Tenn., CA est **$500,000**, 7 story, rein-conc. OFFICE, Seventh & Bishop Sts., LITTLE ROCK, ARK., Capital Investment Corporation, c/o Claude Carpenter Jr., National Old Line Bldg., Little Rock, Ark., Robert Lee Hall, 3355 Poplar Ave., Memphis, Tenn., archt.

▲ **Southwest Development Corp.**, c/o Bridges, Campbell & Associates, archts., 279 N. Willis St., Abilene, Tex., Owner Builds, **$1,700,000**, SHOPPING CENTER, ABILENE, TEX. CD 1/26/61.

M. Z. Collins Constr. Co., 616 W. 6th St., Austin, Tex., CA **$775,000**, CLUB, AUSTIN, TEX. Forty Acres Club, 2106 Guadalupe St., Austin, Tex. CD 1/27/61.

▲ **Brown & Root, Inc.**, 4100 Clinton Drive, Houston, Tex., CA est. **$7,500,000**, design and construct petro-chemical PLANT, Colorado River Barge Channel, BAY CITY, TEX. Celanese Chemical Co., 180 Madison Ave., New York, N. Y. CD 10/3/60.

▲ **Robert E. McKee, Gen. Constr., Inc.**, P.O. Box 2848, Dallas, Tex., CA **$1,347,000**, 2 story, PLANT, RESEARCH AND ENGINEERING AND OFFICE, CARROLLTON, TEX. Otis Engineering Corp., 6612 Denton Dr., Dallas, Tex. BA 2/29/60. CD 12/29/60, under LB.

▲ **Yates Constr. Co.**, 2011 Cedar Springs Rd., Dallas, Tex., CA **$1,353,845**, est. $1,800,000, (12 bidders), 1 story, with one 3 story wing, 127,735 sq. ft. fl. sp. brick, tile, conc. and steel, T. W. Brown Junior High SCHOOL, Justin F. Kimball School site, DALLAS, TEX. Dallas Ind. School Dist., Dallas, Tex. Fred Buford & Associates, 500 Interurban Bldg., Dallas, Tex., archts. BA 1/24/61. CD 1/31/61, under LB.

Continental Electronics Mfg. Co., (Sub Ling-Altec Electronics, Inc.) 4212 S. Buckner Blvd., Dallas, Tex., Owner builds **$448,000**, 2 story PLANT EXPANSION; Owner builds **$770,000**, 86,000 sq. ft., plant addn., DALLAS, TEX. CD 5/12/60.

▲ **Procon, Inc.**, 111 Mt. Prospect Rd., Des Plaines, Ill., CA **$2,250,000**, HYDEAL UNIT, benzene production, Hwy. 146 at 6th St., TEXAS CITY, TEX. Plymouth Oil Co., Benedum Trees Blvd., Pittsburgh, Pa. CD 10/19/60.

▲ **Yates Constr. Co.**, Box 1206, Dallas, Tex., LB **$1,345,345**, est. $1,800,000, T. W. Browne Junior High SCHOOL No. 8, DALLAS, TEX. Dallas Independent School Dist., 3700 Ross Ave., Dallas, Tex. Fred Buford & Associates, 500 Interurban Bldg., Dallas, Tex., archts.-engrs. Mark Lemmon, 201 Thomas Bldg., Dallas, Tex., engr. BA 1/24/61. CD 1/4/61.

▲ **Baxter Constr. Co.**, P. O. Box 7744, Houston, Tex., LB **$1,510,700**, (11 bidders), POWER PLANT AND LAUNDRY, HOUSTON, TEX. Methodist Hospital, St. Luke's Hospital and Texas Children's Hospital, c/o 6516 Bertner St., Houston, Tex. Milton McGinty, 2425 Ralph St.; Staub, Rather & Howze, 2814 Virginia St., Houston, Tex. archts. Walther P. Moore, 2 Pinedale Place; and Raymond Jenkins, 316 Blossom St. Houston, Tex., engrs. BA 1/19/61. CD 1/11/61.

Jansen Constr. Co., 1203 Powhattan St., Dallas, Tex., CA **$412,000**, 1 story, 42,000 sq. ft., masonry, brick, SHOPPING CENTER, Gus Thomasson Rd., MESQUITE, TEX. Joseph Sidran, Sidran of Dallas, 2030 N. Field St., Dallas, Tex. Richard C. Wallace, 912 Vaughn Bldg., Dallas, Tex., archt. CD 7/11/60.

▲ **Tellepsen Constr. Co.**, 1710 Telephone Rd., Houston, Tex., CA **$1,250,000**, 4 story, 108 bed., masonry HOSPITAL, basement, Thomas & Tatar Sts., PASADENA, TEX. Small Investors Real Estate Plant Inc., 1710 Telephone Rd., Houston, Tex. Completion April 1962.

▲†**Ross E. Cox**, Box 591,—Canon City, Colo., CA **$1,080,500**, LABORATORY addn. to radio laboratory, for National Bureau of Standards, 05054(917) BOULDER, COLO. General Services Admin., Bldg. 41, Denver Federal Center, Denver, Colo., Meredith Musick & Claton C. Musick, 1529 York St., Denver Colo., archts., BA 1/16/61. CD 1/60/61, under LB.

▲ **Newton Constr. Co., Inc.**, Box 4108, Odessa, Tex., LB **$1,400,000**, masonry, high SCHOOL, CARLSBAD, N. M. Bd. Education, Carlsbad, N. M. Kern Smith, 105 A Canal St. Carlsbad, and Carlsbad, Caudill, Rowlett & Scott, 3400 Montrose Blvd., Houston, Tex., archts-engrs. BA 1/24/61. CD 1/11/61.

▲† **Sletten Constr. Co.**, 1301 10th Ave. N. and William M. Kessner, Inc., North of Great Falls, both Great Falls, Mont., LB **$4,767,760**, est. $4,900,000 (3 bidders), 300 unit Capehart HOUSING, Malmstrom Air Force Base, GREAT FALLS, MONT. Base Procurement Office, Malmstrom Air Force Base, Mont. BA 1/26/61. CD 12/13/60.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **Alaska, Eielson Air Force Base**—BA 2/28—U. S Eng., P. O. Box 7002, Anchorage, relocate ALERT HANGAR and alert taxiway, Eielson Air Force Base. Inv. 61-28. $1,300,000. CD 7/26/60.

▲ **CALIFORNIA**—BA 3/9—State Div. Hys., 120 S. Spring St., Los Angeles, (ROAD),

Los Angeles Co.—grading paving 0.8 mi. eight lane freeway Hollywood Freeway Extension from Ventura Freeway to Magnolia Blvd. $3,000,000. CD 11/13/59.

▲ **CALIFORNIA**—BA 3/16—State Div. Hys., 120 S. Spring St., Los Angeles (ROAD),

Orange Co.—grading, paving 3.5 mi. four lane freeway Newport Freeway (State Sign Rte. 55) between ½ mi. south Santa Ana Freeway and 1/10 mi. south, Chapman Ave. **$4,620,000.** CD 11/13/59.

BUILDINGS—BA

▲ **Calif., La Puente**—BA 2/20—Hudson School Dist., 15959 E. Gale Ave., Cedarline JUNIOR HIGH SCHOOL, North Whittier Heights, Whittier. Extended Date. $1,000,000. Kistner, Wright & Wright, 1125 W. 6 St., Los Angeles, Calif., archts. CD 1/27.

▲† **Alaska, Fort Greeley**—BA 3/2—U. S. Eng., P. O. Box 7002, Anchorage, FAMILY HOUSING, outside utilities, Inv. 61-25. $2,000,000. CD 7/26/60.

▲ **Ore., Portland**—BA 3/16—Standard Insurance Co., Standard Insurance Bldg., 17 story OFFICE, $8,000,000. Skidmore, Owings & Merrill, 2040 SW Jefferson St., archts. CD 6/5/59.

HEAVY CONSTRUCTION—LB & CA

▲† **Western Contracting Co.**, Benson Bldg., Sioux City, Iowa, CA **$5,170,000**, RUNWAY, Whidbey Island Naval Air Station, Oak Harbor, Spec. 28262/59, WHIDBY ISLAND, WASH. Dist. P. Wks. Office, 13th Naval Dist., U. S. Naval Station, Seattle, Wash. BA 1/24. CD 1/26, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 1/26 (ROAD),

Frederickson & Watson Constr. Co. and **Charles McCloskey**, 873 81 Ave., Oakland, Calif., LB **$6,506,432**, (4 bidders), grading, paving 3.1 mi. 4-6 lane freeway, Ventura Freeway (US Hy. 101) and 1.1 mi. 4-lane freeway, Ojai Freeway (US Hy. 399), incl. major interchange, Ventura Co. CD 12/14.

▲ **Morrison-Knudsen Co., Inc.**, Hoge Bldg., Seattle, Wash., LB **$2,186,789** (9 bidders), TUNNEL grading, paving to Oregon Mountain Tunnel, U. S. Hy. 199, Hazelview Summit, Del Norte Co., CALIFORNIA. State Div. Hys., 1120 N St., Sacramento, Calif. BA 2/1. CD 12/29.

▲† **Viking Co.**, P.O. Box 8, Covina, Calif., CA **$1,299,717**, convert Wherry Housing to PUBLIC QUARTERS, Marine Corps Air Facility, Spec. 19541, EL TORO, CALIF. 11th Naval Dist. P. Wks., 1220 Pacific Hy., San Diego 1, Calif. BA 1/11. CA 1/25. CD 1/16, under LB.

BUILDINGS—LB & CA

▲ **Myers Bros.**, 3407 San Fernando Rd., Los Angeles, Calif. LB **$1,233,936** SENIOR CITIZENS HOUSING, CLAREMONT, CALIF. Claremont Village Green Inc., 717 N. La Cienega Blvd., Los Angeles, Calif. BA 12/22 CD 12/7.

▲ **Marvin Wilson Constr. Co.**, 16610 Ventura Blvd., Encino, Calif., Owner Builds, **$1,058,000**, 42 stucco DWELLINGS, Estrondo and Oak View Drs., Tract 23719, ENCINO, CALIF.

▲ **Baldwin-Erickson-Campbell**, 9 and Yuba Sts., Marysville, Calif., CA **$6,000,000 Total** Cost $25,000,000, 1 story, 1,000,000 sq. ft. rein.-conc. steel FACTORY, HANFORD, CALIF. Armstrong Tire & Rubber Co., 475 Elm St., West Haven, Conn. David H. Horn, 2016 Merced, Fresno Calif. archt. BA 1/10. CD 12/2.

▲ **Co-Ordinated Constr., Inc.**, 618 S. Spring St., Los Angeles, Calif., CA **$1,000,000**, 3 story, 37,000 sq. ft. OFFICE, Hollywood Freeway, Barnham and Lankershim Blvds., HOLLYWOOD, CALIF. John B. Kilroy & Assocs, 5657 Wilshire Blvd., Los Angeles, Calif. Cejay Parsons, 300 S. Hobart St., Los Angeles, Calif., archt. CD 2/3.

▲ **Neil Constr. Co.**, 5858 Wilshire Blvd., Los Angeles 36, Calif., CA **$8,000,000**, concrete OFFICE-GARAGE, 10889 Wilshire Blvd., Tract 24158, LOS ANGELES, CALIF. Kirkeby Realty, Inc., 2430 W. 3 St., Los Angeles 57, Calif. Claud Beelman & Assoc., 7421 Beverly Blvd., Los Angeles, Calif., archts. Brandow & Johnston, 2430 W. 3 St., Los Angeles, Calif., engrs.

▲ **Edmere Development Inc.**, Box 486, Tustin, Calif., CA **$1,078,850**, 42 DWELLINGS, Tract 3574, ORANGE, CALIF. Crailet Constr. Co., Box 486, Tustin, Calif.

▲ **Secrest & Fish Inc.**, 1909 W. Whittier Blvd., Whittier, Calif., CA **$1,989,619** Women's PHYSICAL EDUCATION, Campus Center Bldg., Increment 1, Pasadena City College, PASADENA, CALIF. Pasadena Bd. Educ., 351 S. Hudson Ave., Pasadena, Calif. BA 1/17 CD 1/26 under LB.

† **Mann Constr. Co.**, Redmond, Ore., LB **$145,285**, est. $170,901 (15 bidders), roads and security FACILITIES, Umatilla Ordnance Depot, Inv. 61-74, UMATILLA, ORE. U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. BA 1/17. CD 1/13.

On one job: 20 different materials

Contractor slashes costs by using Scrapers to handle all of them. The make: Michigan.

Fine sand. Gravel. Silt. Clay. Gumbo. Shale. Slate. Three soil types with a CBR under 5.0. Twenty kinds of material in all.

A real test for any scraper fleet, you'll certainly agree.

It all took place *in one 5 mile road contract*—a relocation of U.S. 31W through the hilly river-valley "Knob" country of northern Kentucky. The dirtmover—Ferguson Contracting Company, Princeton. Their fleet—a matched quartet of 262 hp Michigans: one Model 280 Tractor Dozer for push-loading, three 19-yd Model 210 Tractor Scrapers *for all dirtmoving!*

Work started in unusually wet weather—4½ inches of rain *more* the first month than normal, according to Weather Bureau statistics. First, under these conditions, the machines stripped topsoil. Then on they went to the first cut—containing a type of clay. Loads averaged 14 pay yds each . . . load time, about 40 seconds. According to time studies made by Tom Ferguson, company president, each of his three Michigan Scrapers, on typical 3000 ft cycles, delivered 12 loads per hour. Production averaged 4,000 pay yds per 8-hour shift . . . a tribute partly to the Michigan Dozer's fast loading speed, 5 to 7 mph . . . partly to the Dozer's fast backup, 8 to 10 mph. *And the Michigan Scrapers, with their power shift and torque converter providing maximum speed on the grades, often hauled in fourth gear (up to 31½ mph).*

Project Supt Ray Cardwell reports that the "ease with which new operators learned to handle the power-shifted, power-steered Michigans" contributed heavily to the success of the job. So too did Michigan ease of maintenance, dependability, and the good service from distributor Rudd Construction Equipment Co of Louisville.

YOUR Michigan distributor will be glad to show you these machines in action so you can judge their advantages for yourself. Four Dozers, 162 to 600 hp; three Scrapers, 10½ to 29 yds, to choose from.

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▲† **Earl Wilson Constr. Co.,** 9213 Columbus Ave., Sepulveda, Calif., LB **$1,922,240,** est. $2,106,700, (8 bidders), convert Wherry Housing to PUBLIC QUARTERS, Cabrillo Heights, Spec. 19563, **SAN DIEGO, CALIF.** 11th Naval Dist. P. Wks., 1220 Pacific Hy., San Diego 1, Calif. Paderewski, Mitchell & Dean, 1017 First Ave., San Diego 1, Calif., archts. BA 1/17. CD 12/20.

▲ **Peter Kiewit Sons Co.,** 345 Kieways Ave., Arcadia, Calif., LB Total Est. **$6,500,000,** Kahn OFFICE, First and "C" Sts., SAN DIEGO, CALIF. Irvin J. Kahn, 3010 Cowley Way, San Diego 17, Calif. BA 1/26. CD 1/9.

▲ **Hilp & Rhodes,** 918 Harrison St., San Francisco, Calif., CA **$1,454,800,** concrete COMMERCIAL BLDG., 14665 Roscoe Blvd., Tract 3018, VAN NUYS, CALIF. Montgomery Ward & Co., Inc., 619 W. Chicago Ave., Chicago 7, Ill

CANADA

HEAVY CONSTRUCTION—BA

▲ **Ont., Paris**—BA 2/21—Ontario Water Resources Comn 801 Bay St., Toronto (a) 1.1 m.g.d. SEWAGE TREATMENT PLANT, activated sludge type, $350,000; (b) 138,000 ft. SEWERS, three pumping stations for sewage treatment plant, **$730,000.** J. D. Lee & Co., Ltd., 194 Ontario St., Kingston, engrs. CD 5/11/59.

▲ **Ont., Ottawa**—BA 3/7—City, City Hall, 18,100 ft. 8 ft. outfall SEWER tunnel, South Bank Ottawa River,, $5,300,000. Plans deposit $100. DeLeuw, Cather & Co. of Canada Ltd., 226 Sparks St., engrs.; SEWAGE PLANT, marine outlet sewer, elevator water tower fdn., raw water pumping station, South Bank Ottawa River, $3,422,000. Plans deposit $100; four raw SEWAGE PUMPING UNITS, South Bank Ottawa River, $300,000. Plans deposit $50. James F. MacLaren Assocs., 321 Bloor St. E., Toronto, engrs. CD 2/3/61.

BUILDINGS—BA

▲ **Ont., Strathroy**—BA 2/23—Strathroy Hospital Bd., Strathroy, 1 and 2 story, brick, steel 80 bed HOSPITAL, $1,500,000. Plans deposit $50. J. Fred Green, 544 Talbot St., St. Thomas, archt. CD 2/17/59.

▲ **Que., Montreal** — BA 2/28 — Bd. Governors, McGill University, Sherbrooke St. W. (selected list of bidders), two 7 story, 48x179 ft. rein.-con., brick, stone MEN'S RESIDENCES with penthouse; 2 story, approx. 12,000 sq. ft. CAFETERIA and DINING HALL, rein.-con. fdns., $3,500,000. Durnford, Bolton, Chadwick & Ellwood, 4101 St. Catherine St. W., archts. CD 5/31/56.

BUILDINGS—LB & CA

▲ **Eastern Constr. Co., Ltd.,** Box 96, Walkerville, Ont., CA Est. **$1,210,000,** 4 story, 38x320 ft., rein.-con. MOTHERHOUSE, CHATHAM, ONT. Ursuline Order, 85 Grand Ave. W., Chatham, Ont. J. W. Storey, 15 Grand Ave. W., Chatham, Ont., archt. Todgham & Case, 21 7th St., Chatham, Ont., engrs.

▲ **Canadian Bechtel Ltd.,** 25 King St. W., Toronto, Ont., CA est. **$5,000,000,** 30,000,000 gal. per year benzene PLANT, SARNIA, ONT. Imperial Oil Ltd., 445 Christian St. S., Sarnia, Ont. CD 9/14.

▲ **Skyline Investments & Lakeside Courts Ltd.,** 26 Carscadden Dr., Toronto, Ont., Owner builds, **$1,500,000,** 9 story APARTMENT, Lakeshore Rd., TORONTO, ONT. Zurich Consultants, 163 Bedford Park, Toronto, Ont., engrs.

▲ **Concrete Constr., Inc.,** 1082 Decarie Blvd., Montreal, Que., CA Est. **$3,000,000,** 11 story, 40x300 ft., concrete, brick, stone, rein.-con. HOSPITAL extension, MONTREAL, QUE. Hospital St. Jean de Dieu, Sherbrooke and Hochelaga Sts., Gamelin, Longue, Pointe, Que. CD 8/11.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

Brazil—BA 6/1—Ministry of Transportation, Rio de Janeiro, two-way automotive TRAFFIC TUNNEL between Rio de Janeiro and Niteroi.

Peru—Bids Asked—Ministry P. Wks., Govt. Peru, Lima, FERTILIZER PLANT, Cuzco; 20,000 kw hydroelectric generating set, Macchu Picchu Power Station. Plans deposit $37.

FOREIGN

HEAVY CONSTRUCTION—BA

Australia — BA 6/29 — Secretary, Western Australian Govt. Tender Bd., 74 Murray St., Perth, STEAM GENERATING PLANT and station, Muja Generating Station, 16 mi. east, Collie. Plans deposit $5.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **Foster-Wheeler Corp.,** 666 5 Ave., New York 19, N. Y., U. S. A., CA over **$23,000,000** design and construct copper and zinc FABRICATING PLANT, Iligan Bay., MINDINAO ISLANDS, PHILIPPINE ISLANDS. Marinduque Iron Mines Agents, Inc., Manilla, Philippine Islands.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Pa., Phila.**—Dpt. Procurement, City Hall Annex, Belmont FILTER PLANT, $8,500,000. Morris Knowles, Inc., 351 5th Ave., Pittsburgh, consult. engr. Bids May 1961. CD 11/8/58.

▲ **Que., Rosemere**—Town, Town Hall, FILTRATION PLANT and water distribution system, **$2,000,000.** C. C. Lindsay, 35 York St., Westmount, consult. engr. Bids shortly 1961. CD 1/5/59.

SEWERS, WASTE DISPOSAL

▲ **Ill., East Peoria**—City, City Hall, voted bonds Jan. 17, SEWERS. **$1,835,000.** Crenshaw & Jost, 512 Court St., Pekin, engrs. CD 12/14/60.

▲ **Mich., Pontiac**—Oakland Co. Drain Comn., 550 S. Telegraph Rd., Twelve Town DRAIN Proj. north section, South Eastern Oakland Co., Troy, Madison Heights and Southfield. McNamee, Porter & Seeley, 2223 Packard Rd., Ann Arbor, Mich., consult. engrs. To go ahead 1961;

middle section Twelve Town Drain Proj. Hubbel, Roth & Clark, 954 N. Hunter Blvd., Birmingham, Mich., consult. engrs.;

south section Twelve Town Drain Proj. Pate & Hern, Inc., 532 Michigan Bldg., Detroit 26, Mich., consult. engr. Daniel W. Barry, Co. engr. Total Cost **$47,788,000.** CD 1/1/56.

STREETS AND ROADS

▲ **Fla., Jacksonville**—City, City Hall, 23 street RESURFACING projects, 19 paving projects, total length 8.19 mi., **$1,000,000.** CD 6/4/59.

▲ **Ill., Alton**—City, City Hall, 4,100 ft. ROAD, E. Broadway with Riverside Bern Hy., **$1,000,000.** Sheppard, Morgan & Schwab, 10 E. Broadway, Alton, Ill., consult. engrs.

▲ **N. Y., Buffalo**—City, City Hall, Zone 2, 1961 STREET resurf. program. **$1,870,000.** CD 12/19/56.

▲ **Tex., Fort Worth**—City, City Hall, voted bonds Jan. 24, STREET PAVING, **$5,200,000;** street impvts., Wichita with Bishop St., median revisions, Lancaster University Dr. & Camp Bowie & Channelization of exist. intersections, **$950,000;** streets, **$750,000.** CD 11/18/60.

EARTHWORK, WATERWAYS

▲ **Colorado**—Rocky Mountain Power Co., c/o Van Sickle & Assocs., consult. engrs. 275 University, Denver, Sweetwater HYDROELECTRIC PROJECT, incl. collection system, reservoirs, transmountain tunnel diversion, flow lines, two penstocks, two powerplants, Sweetwater Creek and White River, Dotsero, **$21,000,000.**

AIRPORTS

▲† **Ala., Huntsville**—National Aeronautics & Space Admin., 1520 H. St., NW, Wash., D. C., instrumentation and checkout bldg. addn., systems analysis and reliability division, Marshall Space FLIGHT CENTER, Sverdrup & Parcel, Inc., 915 Olive St., St. Louis 1, Mo., archts.-engr. CD 8/19/60.

▲† **Va., Langley Field**—National Aeronautics & Space Admin., Langley Research Center, plans by J. E. Greiner Co., archt.-engr., 1106 N. Charles St., Baltimore, Md., DYNAMICS RESEARCH LABORATORY, Langley Research Center. **$4,000,000.** CD 8/16/60.

UNCLASSIFIED

▲ **Calif., Sacramento**—Sacramento-Yolo Port Dist., California Fruit Bldg. 4 and J Sts., **$9,850,000** bond election Apr. 4, WHARVES, Sacramento Port. CD 10/24, under Earthwork, Waterways.

▲ **Pa., Phila.**—U. S. Eng., 24th. St. & Maryland Ave., Baltimore, Md., 2nd phase, ELECTRICAL DISTRIBUTION, Frankford Arsenal, **$2,500,000.** Albert C. Wood, Assoc., Inc., 1832 Arch St., consult. engr. Bids April 1961. CD 5/22/59.

N. Y., Plainview—Town of Oyster Bay, Audrey Ave., Oyster Bay, SWIMMING POOL, bath houses, ball fields, etc. **$875,000.** H. G. Holzmacher & Assocs., 500 Broadhollow Rd., Melville, N. Y., engrs. Bids early March. CD 7/22.

▲ **Tenn., Johnson City**—Larry Carrier, Weaver Pike, Bristol, plans by Godwin & Rawls, 331 N. Main St., CAR RACE TRACK and viewing stands, **$1,000,000.**

▲ **Tex., Fort Worth**—City, City Hall, voted bonds Jan. 24, TRAFFIC SIGNAL and street lighting modernization, **$1,500,000.** CD 11/18/60.

▲ **Utah**—Denver & Rio Grande Western Railroad Co., 1531 Stout St., Denver, Colo., 40 mi. RAILROAD from Brandle to Moab. **$5,000,000.**

▲ **British Columbia**—British Columbia Electric Co. Ltd., 970 Burrard St., Vancouver, TRANSMISSION LINE between Bridge River power proj. and Cheekeye substation, Squamish, **$2,300,000.** International Power & Engineering Consultants, 570 Dunsmuir St., Vancouver, consult. engrs. CD 12/19/58.

▲ **B. C., Vancouver**—Magna Pipeline Co., Ltd., 850 W. Hastings, Vancouver, 48 mi. 4.85 in., flexible NATURAL GAS LINE under Georgia Straits to Vancouver Island, with distribution system, **$20,000,000.** International Power & Engineering Consultants, 570 Dunsmuir St., Vancouver, consult. engrs.

▲ **Ontario**—Union Gas Co., King St., Chatham, laying 14 mi. 10 in. pipe and 7 mi. 4 in. pipe from Waterloo to supply Fergus, Elora and intermediate points, **$1,000,000.**

PUBLIC BUILDINGS

▲ **Ala., Huntsville**—Huntsville Hospital, Bd. Trustees, plans by E. Todd Wheeler, Perkins & Will 309 W. Jackson, Chicago, Ill., HOSPITAL ADDN, **$3,000,000.** Brown Engineering Co., Inc., Huntsville, Ala., consult. engr. & assoc. archt., CD 8/23.

▲ **Alaska, Anchorage**—City, City Hall, gas turbine ELECTRIC GENERATING PLANT, **$2,024,000.** R. W. Beck & Assocs., Tower Bldg., Seattle 1, Wash., engrs. Work to start this year.

▲ **Ark., State College**—Arkansas State College, State College, plans by Stuck, Frier, Lane & Scott, 217 E. Washington St., 1 story women DORMITORY, **$1,500,000;** fine arts, **$600,000,** to go ahead 1963; Students Union Center, **$1,700,000,** to go ahead July, 1961; Library, **$1,000,000;** bids Spring-Summer 1962; Field House, **$800,000,** to go ahead 1964, CD 5/6, under Jonesboro.

▲ **Calif., Oxnard**—Oxnard Union High School Dist., 309 S. "K" St., plans by Fisher & Wilde, 20 S. Ash St., Ventura, Calif., HIGH SCHOOL, Avenida De Las Flores and Moorpark Rd., Thousand Oak. **$2,000,000.**

▲ **Conn., Torrington**—Town, Town Hall, plans by Nichols & Butterfield, 998 Farmington Ave., West Hartford, 3 story, 4 unit, 2 wings, High SCHOOL, Elise Besse Park, **$2,565,000.** Marchant & Minges, 1007 Farmington Ave., West Hartford, Conn., consult. engrs., Maine & Tillapaugh, 993 Farmington Ave., West Hartford, Conn., site engrs. CD 6/6/60.

▲ **D. C. Wash.**—D. C. Govt. Motor Vehicle Parking Agency, 300 Indiana Ave. NW, four-level PARKING LOT under Farragut Square, **$3,200,000** (no appropriation). DeLeuw Cather & Co., 208 N. Wacker St., consult. engrs. CD 1/25/60.

▲ **Fla., Miami**—Dade County Commrs. and City Commrs., Courthouse, County-City OFFICE bldg., **$4,000,000.** CD 9/58/56.

▲† **Fla., Tampa**—General Services Admin., 19th & F Sts., NW, Wash., D. C., plans by Robert Wielage, 1303 CS Dale Mabry Hy., and H. Leslie Walker, 620 Twiggs St., Federal OFFICE, **$3,728,000.** CD 6/24/60.

▲ **Ill., Alton**—Alton Community Unit School Dist. No. 11, Bd. Educ., Hadley House, **$2,995,000** bond election Sept. 23, SCHOOLS incl. HIGH SCHOOL, **$500,000.** Kenney & Stolze, 402 Metropolitan Bldg., 307 Henry St., archt. CD 9/30/57.

▲ **Ill., Chicago**—Bd. Educ., 228 N. LaSalle St., Zone 1, plans by Schiller & Frank, 23 E. Jackson Blvd., Zone 4, SCHOOL, 44th St. and S. Park Ave., **$800,000;** plans by Saul Samuels, 228 N. LaSalle St., Zone 1, Kinzie High SCHOOL addn., 5625 S. Mobile Ave., **$1,300,000;** plans by Bradley & Bradley, 924 Main St., Rockford, SCHOOL, Kenton and Maypole Aves., **$800,000;** plans by Harry Weese & Assocs., 104 S. Michigan Ave., Zone 1, SCHOOL, Harrison St. and Sacramento Ave. **$800,000;** plans by Brooks Buderus Assocs., 233 NW Hy., Park Ridge **$800,000.** CD 6/11/57

▲ **Ky., Lexington**—Commonwealth Ky., Div. Purchases, Capitol Office Bldg. Annex, Frankfort, plans by John H. Bickel, 1115 South 4 St., Louisville, Ky., Agricultural SCIENCE CENTER, University of Kentucky. **$7,000,000.**

▲† **Md., Baltimore**—General Services Admin., 19 & F Sts. N.W., Wash., D. C., plans by Fisher, Ness, Campbell & Assocs., 2120 N. Charles, Baltimore, Md., James R. Edmunds, Jr., 1025 St. Paul St., Baltimore, Md., and Fenton & Lichtig, 2219 Maryland Ave., Baltimore, Md., FEDERAL OFFICE. **$18,690,000.**

▲ **Minn., Minnetonka**—Bd. Educ. Independent School Dist. No. 276, bond election Mar. 21, JUNIOR HIGH SCHOOL addn. **$2,401,000;** HIGH SCHOOL addn. **$1,189,000.** Bissell, Belair & Green, 1111 Nicollet Ave., Minneapolis, Minn., archts.

▲ **Mo., Cape Girardeau**—Southeast Missouri State College, STUDENT HOUSING. **$2,500,000.**

▲ **Neb., North Platte**—General Services Admin., 19 and F Sts., N. W. Wash., D. C., plans by Robert L. Murphy, North Platte, and Henningson, Durham & Richardson, Inc., 2962 Harney St., Omaha, POST OFFICE AND COURTHOUSE, **$2,109,000.** CD 2/4/60.

▲ **N. J., Cresskill**—Bd. Educ. Borough Cresskill, Dogwood Lane, voted referendum bonds and project Jan. 24, HIGH SCHOOL, north site. **$2,400,000.** Warren Ashley, 740 N. Main St., West Hartford, Conn., archt. CD 12/8.

▲ **N. Y., Middle Island**—Middle Island Central School Dist. No. 12, Middle Country Rd., plans by Warren H. Ashley, 740 N. Main St., West Hartford, Conn., Longwood HIGH SCHOOL. **$3,200,000.** Segner & Dalton, 55 Church St., White Plains, N. Y., mechanical engrs. Loomis & Loomis, 252 Broad St., Windsor, Conn., structural engrs.

▲ **N. Y., Roosevelt**—Bd. Educ., USFD No. 8, plans by F. P. Wiedersum Assocs., 65 Roosevelt Ave., Valley Stream, N. Y., SENIOR HIGH SCHOOL and Primary School. **$2,000,000-$3,000,000.** CD 11/23.

▲ **N. Y., Wantagh**—Bd. Educ. U.F.S.D. No. 23, Beltag Ave., plans by George Tumey, 1941 Wantagh Ave., Wantagh, N. Y., Wantagh JUNIOR-SENIOR HIGH SCHOOL addn. **$2,450,000.** Weiskopf & Pickworth, 230 Park Ave., New York 17, N. Y., structural engrs. Clyde Alston, 397 Clinton St., Hempstead, N. Y., mechanical engr. CD 10/20.

▲ **N. Y., Yonkers**—Yonkers Municipal Housing Auth., Bldg. 8, Schlobohm Houses, 300 unit public HOUSING, Garden St. off Palisades Ave. Over **$3,000,000.**

▲ **Ore., Milwaukie**—Bd. Educ., Union High School Dist. 5, 2202 S.E. Willard St., Zone 22, plans by Hewlett & Jamison, 1430 S.W. Clay St., Portland, HIGH SCHOOL. **$2,418,000.** CD 1/17, under Ore., Gladstone as Project Location.

▲ **Pa., Zelienople**—Southwest Butler Co. Jt. Sch. Dist., plans by Hunter, Campbell & Rae; 5 Ave. and 36 St., Altoona, secondary SCHOOL, Proj. 762. **$2,500,000.** CD 1/20.

▲ **R. I., Pawtucket**—City Housing Authority, City Hall, plans by Castellucci & Galli & Planka Assoc., 75 Empire St., Providence, HOUSING FOR THE ELDERLY, Broad & Barton Sts., **$1,500,000.** CD 1/3/61.

▲ **Tex., Corpus Christi**—City, City Hall, Courthouse, plans by Smyth & Smyth, Gulf Security Bldg., and Ron. L. Vogler, 225 Oleander St., 200 bed Memorial HOSPITAL ADDN. **$6,441,000.** Rob. L. Vogler, 225 Oleander St., consult. engr. Bids June 1961. CD 9/10/59.

▲ **Utah, Salt Lake City**—Utah State Bldg. Bd., 419 St. Capitol St., Salt Lake Trade TECHNICAL INSTITUTE. **$3,200,000.** CD 9/27/56.

▲ **Wyo., Cheyenne**—General Services Admin., 19th and F Sts. N.W., Wash., D. C., plans by Porter & Porter, 1009 E. 17th St., Cheyenne, and J. T. Banner & Assocs., 409 S. 4th St., Laramie, POST OFFICE and FEDERAL COURTHOUSE. **$7,000,000.** (No appropriation.) CD 2/4.

COMMERCIAL BUILDINGS

▲ **Colo., Denver**—University Management Corp., University of Denver, Campus, two 12 story, 200 unit APARTMENTS, four 3 story apartments, Colorado Blvd. and Evans Ave., approx. **$10,000,000.**

▲ **D. C., Wash.**—Judith Gerber, Inc., c/o Berla & Abel, archts., 2000 P St., NW, OFFICE, 900 17th St., NW, **$4,000,000.** Bids Summer 1961.

▲ **Ky., Louisville**—The Mall Shopping Center, Inc., and Community Res. & Dev. Inc., 114 W. Saratoga St., Baltimore, Md., plans by Rogers Taliaferro & Lamb, 114 N. Charles St., Baltimore, Md., 270,000 sq. ft. SHOPPING CENTER, Shelbyville Rd. at Watterson Expressway near here. Over **$3,000,000.** James K. Wolford, 2210 Maryland Ave., Baltimore, Md., consult. engr. Bids Spring 1961.

▲† **Mass., Boston**—General Services Admin., 18 & F Sts., N.W., Wash. 25, D. C., plans by Architects Collaborative, 63 Brattle St., Cambridge, Mass. and Samuel Glasser Assocs., 234 Clarendon St., Boston, Mass., build-lease FEDERAL OFFICE and Post Office, Scolly Sq., Cambridge, New Sudbury and New Congress Sts., **$33,000,000.** CD 3/13/58.

▲ **Mich., Rochester**—Crittenton General Hospital, 1550 Tuxedo Ave., Detroit 26, 200-bed HOSPITAL, Rochester Rd., **$5,000,000.**

▲ **Mich., Warren**—South Macomb Hospital Corp., 29500 Van Dyke Ave., 200-bed HOSPITAL, 12 Mile and Hoover Rds., **$5,000,000.** CD 4/22/57.

▲ **Minn., Minneapolis**—Kahler Corp., Kahler Hotel, Rochester, and L. A. Malkerson, Shakopee, MOTEL, swimming pool, Hawthorne Ave., 10th and 11th Sts. **$5,000,000.** Constr. in Fall.

▲ **Mo., Kansas City**—Southwestern Bell Telephone Co., 324 E. 11, plans by Neville Sharp & Simon, 25 E. 12, Kansas City, Mo., 8 story, 123,672 sq. ft. masonry and steel frame, OFFICE. **$3,000,000.** Bids June.

▲ **N. J., Fort Lee**—Horizon House, Inc., (subsidiary of Tishman Realty & Constr. Co.), 666 5 Ave., New York 19, N. Y., plans by Kelly & Gruzen, 10 Columbus Circle, New York 19, N. Y., seven 14 story 1,260 units APARTMENTS, 30 acre tract, Hudson River, Palisades Section, Bergen Co. **$50,000,000.**

▲ **N. Y., Brooklyn**—Diocese of Brooklyn, 191 Joralemon St., Zone 2, plans by Stickle & Assocs., 2422 Prospect Ave., Cleveland 15, O., 1,800 student Bishop Ford HIGH SCHOOL, Prospect Park West and 20 St. **$4,500,000.** CD 12/15.

▲ **N. Y., New York**—Dewey Carver, 61 E. 42 St., New York 17, N. Y., plans by Robert L. Bien, 342 Madison Ave., New York 17, N. Y., 16 story 310,000 sq. ft. 75x286 ft. OFFICE. 118-122 Church St. and 38-58 Murray St. **$6,000,000-$7,000,000.** CD 7/13/59.

▲ **N. Y., New York**—Columbia Broadcasting System, Inc., 485 Madison Ave., New York, N. Y., plans by Charles Luckman, 680 5 Ave., New York 19, N. Y., TV NETWORK production center addn., W. 57, 10 and 11 Aves. **$7,000,000.** Seelye, Stevenson, Value & Knecht, 101 Park Ave., New York 17, N. Y., consult. engrs. Bids in April. CD 1/9.

▲ **N. Y., New York**—David W. Frankel, 654 Madison Ave., New York 21, plans by Resnick & Green, 654 Madison Ave., New York 21, N. Y., 15 story APARTMENT, 1155-67 1st Ave. between E. 63 and E. 64 Sts. **$8,500,000.** Constr. Summer 1961.

▲ **N. Y., New York**—Glickman Corp., 565 5 Ave., New York, Zone 17, plans by William Lescaze, 211 E. 48 St., New York 17, N. Y., 23 story, 10,000 sq. ft., 62 x 162 ft. OFFICE, southeast corner Broadway and Fulton St. **$5,000,000.** Constr. late Spring 1961.

▲ **N. Y., New York**—Sachar Development Corp., 598 Madison Ave., New York 22, plans by S. J. Kessler & Sons, 598 Madison Ave., New York 22, N. Y., 16 story 135,000 sq. ft. Douglas Manor APARTMENT HOUSE NW corner W. 236 St. and Hudson Manor Terrace, Riverdale, Bronx Boro, **$4,500,000;** 6 story, 114 unit, 70,000 sq. ft. Nelson Apartment House, Independence Ave. between W. 239 St. and W. 240 St., Riverdale, Bronx Boro, **$3,500,000.** CD 1/26.

▲ **O., Sharonville**—Carrousel Motels Inc., 8001 Reading St., Cincinnati, plans by Pansiera & Dohme, 3157 Woodford St., Cincinnati, Carrousel North MOTOR HOTEL, 25 acre site bordering Millcreek Expressway, **$10,000,000.**

▲ **Pa., Pittsburgh**—Duquesne University, 801 Bluff St., Zone 19, plans by Gerard & McDonald, Benedum Trees Bldg., 223 Fourth Ave., 10 story, steel frame, 530 students DORMITORY, **$2,250,000.** CD 12/2/52.

▲ **S. D., Sioux Falls**—Skyline Corp., John Theodesen, Garretson, 200 acres, HOUSING development, **$8,000,000.**

▲ **Tex., Dallas**—First National Bank, 1401 Main St., BANK-OFFICE, Elm, Field, Pacific & Akard Sts., **$27,500,000.** CD 9/23.

▲ **B. C., Langley**—Evangelical Free Church of America, Headquarters, 2950 Nicolas Ave., Minneapolis, Minn., U.S.A., plans by R. W. Wilding, 2574 Vine St., Vancouver, CHRISTIAN COLLEGE, campus academic area, residences, athletics area, conference centre, **$5,000,000.**

▲ **Ont., Niagara Falls**—Canadian Global Centre, c/o Charles F. Schmoyer, (Schmoyer, Hosler & Kiley), 1513 Lockport St., Lewiston, N. Y., U.S.A., plans by Visvaldis Upenieks, 234 Eglinton Ave. E., Toronto, EXHIBITION QUARTERS, HOTEL, THEATRE, observation area overlooking Niagara Falls, **$25,000,000** to **$30,000,000.** W. Sefton & Assocs., Ltd., 234 Eglinton Ave. E., Toronto, consult. engrs. CD 1/18.

INDUSTRIAL BUILDINGS

▲ **Tex., Nederland**—Atlantic Refining Co., and Pure Oil Co., Nederland, aromatics REFINING UNIT, 50 mil. gal. capacity annually, **$5,500,000.** Bids last half 1961.

▲ **Tex., Victoria**—Central Power & Light Co., 120 N. Chaparral St., Corpus Christi, 175,000 watt generating electric power PLANT ADDN., **$13,000,000;** machine-repair shop, **$200,000;** grounds and earthwork, for power plant, **$150,000.**

▲ **B. C., Crofton**—British Columbia Forests Products Ltd., 1190 Melville St., Vancouver, NEWSPRINT MILL, Vancouver Island, **$25,000,000.** Constr. starting this year.

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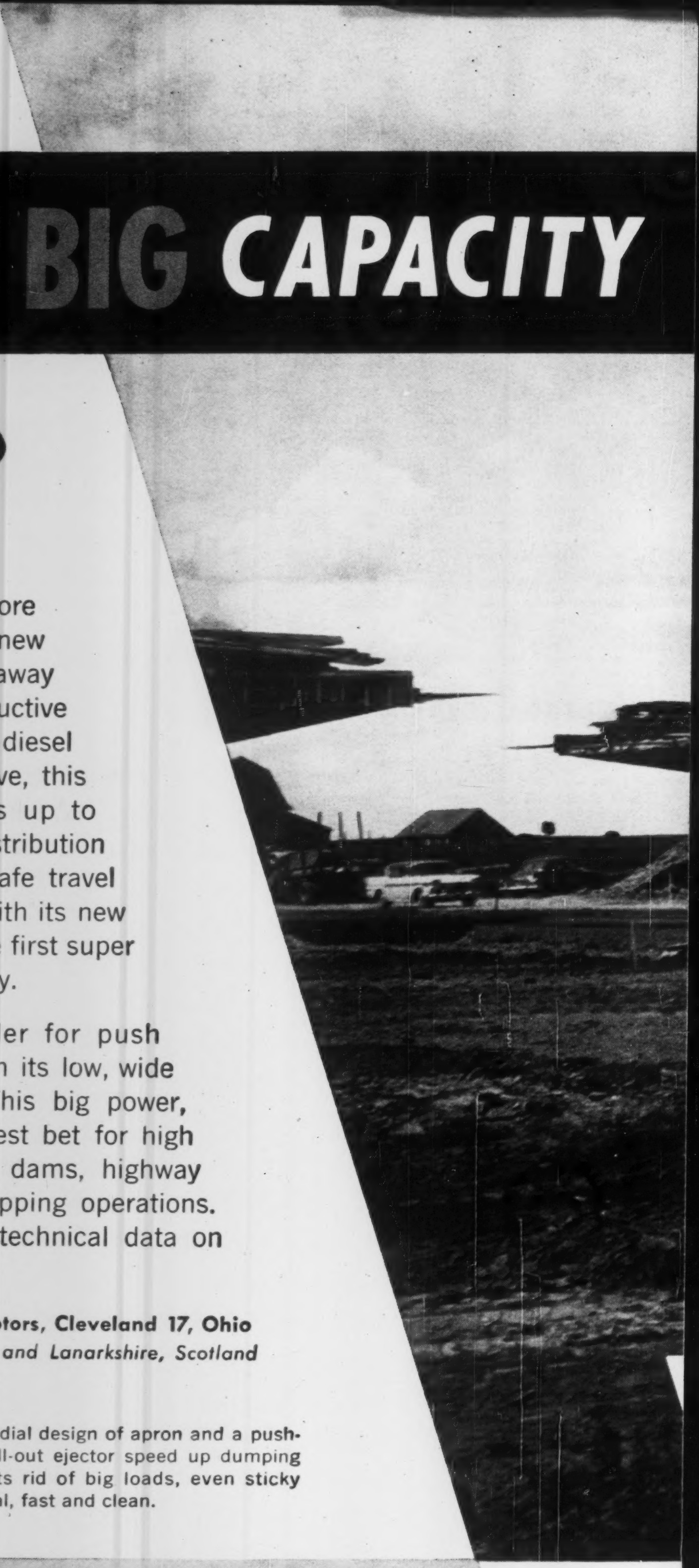

BIG POWER BIG CAPACITY

new SS-33

For moving heaped loads of 40 yds. or more on long, high speed scraper hauls, the new Model SS-33 has already proved it's away ahead of any other big scraper in productive capacity. Powered by a 12 cylinder G.M. diesel of 432 h.p. with 4-speed Torqmatic Drive, this "Euc" moves big payloads at speeds up to 34 m.p.h. Stability and good weight distribution of the six-wheel SS-33 permit faster safe travel speeds that save time on every cycle. With its new push-out, roll-out ejector this "Euc" is the first super scraper able to dump big loads in a hurry.

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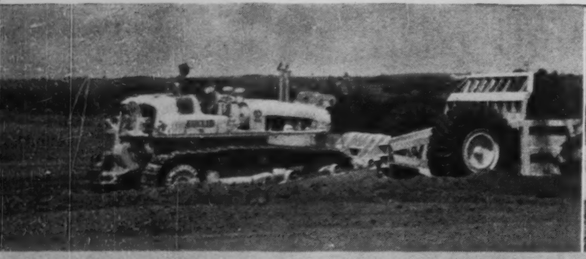
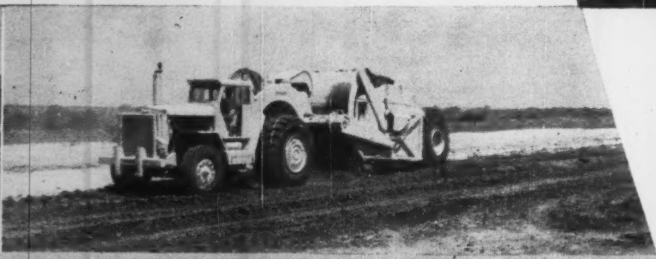


Maneuverability and 425 net h.p. make the TC-12 with full-power shift tops for pusher work, heavy dozing and ripping tough material.



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BIG PRODUCTION

43 YARDS HEAPED △ 34 M.P.H. LOADED △ 432 H.P. V-12 △ PUSH-OUT & ROLL-OUT > EJECTOR

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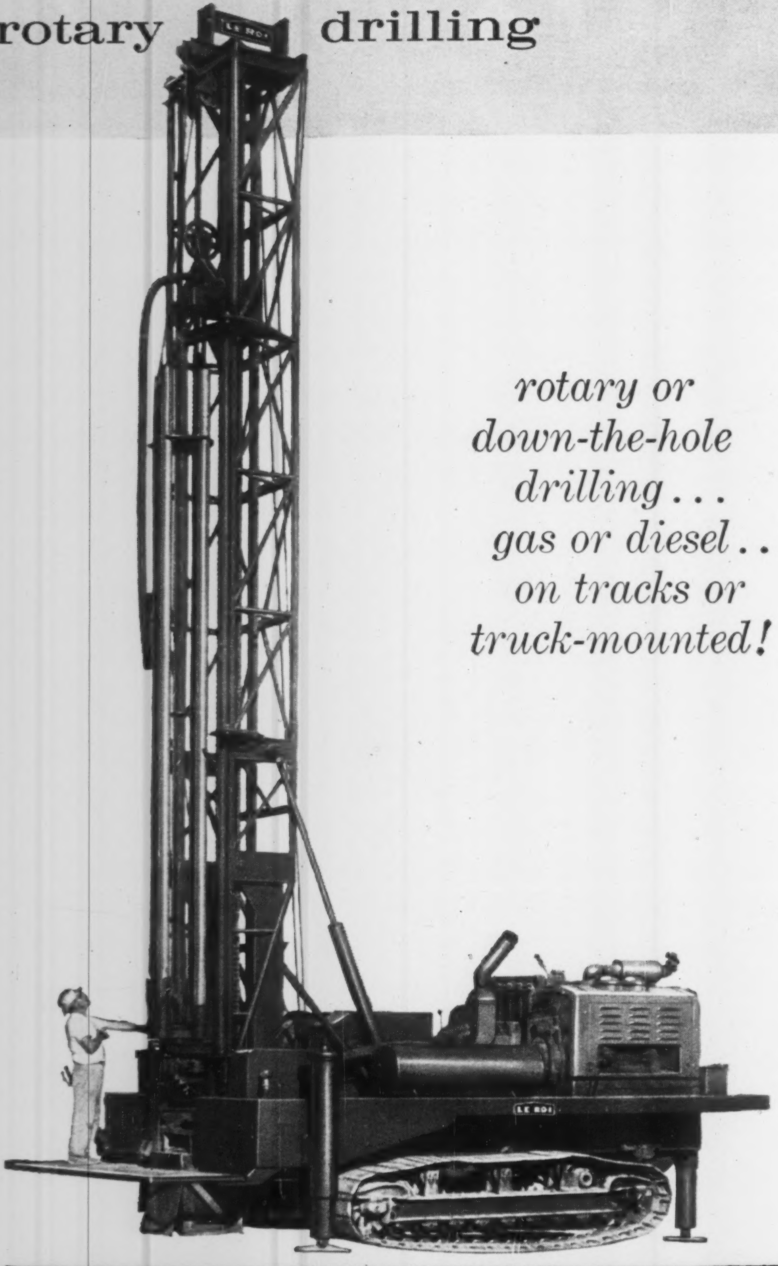
FOR MOVING EARTH, ROCK, COAL AND ORE

LE ROI LRD-3 for powerful, deephole rotary drilling



Here's the *big* rig . . . completely self-contained for putting down hole as large as 7⅜ in. to 100 ft. depth!

The LRD-3 is available with either crawler or truck mounting. An enclosed cab can be furnished to provide all-weather protection for the operator while drilling. All controls are conveniently grouped for easy operation and good visibility.

The traveling head design of the LRD-3 provides positive mechanical power without excessive torque loss under heavy pulldown, and permits easy control in making up and breaking down drill pipe. Every function of the unit is designed to speed productive drilling and keep the operator making hole. Leveling, raising the mast, and even the automatic drill pipe magazine are hydraulically controlled for speedy operation. A powerful dust collector traps cuttings and blows them well away from the unit.

An extra-sturdy 4-speed chain-hydraulic pulldown puts up to 30,000 lbs. of pressure on the bit of the LRD-3. A rugged dual-range transmission provides rotary speeds from 9 to 168 rpm in a selection of 10 forward and 2 reverse speeds.

Where needed, the rotary bit can be quickly changed for a powerful down-the-hole drill. A Le Roi 100 hp dual-manifold air compressor provides plenty of 100 psi air for punching through tough rock with the down-the-hole drill, or it can be set to deliver 625 cfm of 40 psi air for fast, efficient removal of cuttings in rotary operation.

The LRD-3 comes complete with a hydraulically operated magazine with capacity for four 20 ft. drill pipes, and can be equipped with such optional equipment as lights for night-time operation, a mounted bit grinder, air hoist, breakout tongs, water injection system, etc. Specification Sheet AT-147 describes the unit in detail, with complete spec information. Send for a copy.

rotary or
down-the-hole
drilling . . .
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on tracks or
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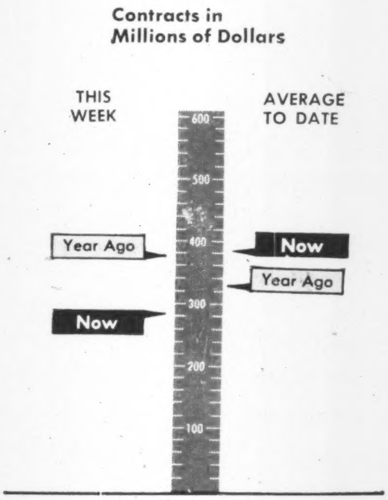
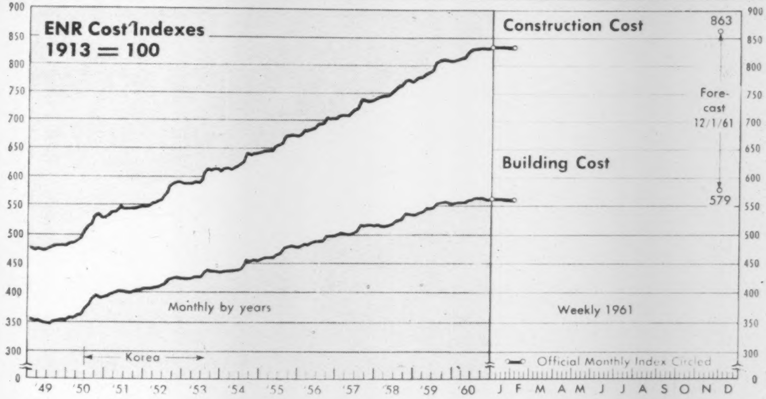
LE ROI

division of Westinghouse Air Brake Co. Sidney, Ohio

Construction Scoreboard

This Week . . .





ENR INDEXES (1913 = 100), 20-cities' average	Week of Feb. 2 1961	% Change from Jan. 5 1961	% Change from Jan. 28 1960
Construction Cost	834.27*	—0.2	+2.7
Building Cost	562.93*	—0.03	1.4

* Official Monthly Index for February 1961

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1919 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

AMOUNT OF CONTRACTS LET

Contracts Awarded In 50 States By Type	This Week millions	1961 millions	Cum. 6 wks Chge '60-'61 %
All Heavy Construction	286.9	$2,293.9	+14
By Ownership			
PRIVATE	147.3	1,108.9	+25
PUBLIC	139.6	1,185.0	+25
State & Municipal	124.6	913.7	+26
Federal	15.0	271.3	+20
By Type of Work			
PUBLIC			
Waterworks	6.1	33.1	+ 7
Sewerage	15.4	66.1	— 9
Bridges*	9.0	61.6	—18
Highways	58.2	462.5	+64
Earthwork, Dams & Waterways	3.6	64.2	—27
Buildings:			
Excl. Housing	33.5	316.3	+64
Housing	6.5	53.6	—30
Unclassified	7.3	127.6	— 4
PRIVATE			
Buildings:			
Mass Housing	54.3	405.8	— 8
Commercial	59.8	238.2	+ 4
Industrial	30.1	403.3	+22
Unclassified	3.1	61.6	— 5

* Includes Private bridges

NOTE Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of Feb. 2 millions	Cum. millions	5 wks Chge '60-61 %
Corporate Securities	$6.6	$156.0	— 6
State and Municipal:			
All Except Housing	101.4	549.5*	—34
Housing	0	1.5	+150
Federal Loans	2.3	28.7	+552
Federal Aid	0	0	0
Total Nonfederal	$110.3	$735.7*	—27
Federal Appropriations:			
Projects in U.S.	0	0	0
Outside U.S.	0	0	0
Total New Capital	$110.3	$735.7*	—27

*Previous total revised.

This Month . . .

WAGE RATES, 20-cities' average	Feb. 1961	% Change from Jan. 1961	% Change from Feb. 1960
Common	$2.765	0	+3.7
Skilled (average 3 trades)	4.119	+0.02	+4.3
Bricklayers	4.336	0	+3.8
Structural Ironworkers	4.164	0	+4.6
Carpenters	3.857	+0.05	+4.5
Equipment operators (average three types)	3.747	+0.3	+4.1

MATERIAL PRICES, 20-cities' average	Feb. 1961	% Change from Jan. 1961	% Change from Feb. 1960
Structural Steel (average 3 mills), per cwt	5.50	0	0
Lumber, 2x4 Fir, per M fbm	115.84	+0.1	−5.3
Lumber, 2x4 Pine, per M fbm	108.42	−0.2	−1.4
Cement, bulk, per bbl	4.04	0	+1.0
Sand, per ton	2.362	0	−4.3
Ready-mixed concrete, per cu yd.	14.26	−0.2	−0.3
Gypsum sheathing, ½" x2' x 8', per Msf*	62.58	+0.1	−1.2
Fiber board sheathing, ½" sq. ed., per Msf*	70.66	0	−3.9
Mineral wool insulation, 3' batts, per Msf*	67.66	−0.7	−1.2
Crushed stone, 1 ½", per ton, CL	2.702	0	0
Concrete blocks, sand/gravel, 8"x8"x16", each*	2.263	−1.0	−3.1

Latest Month . . .

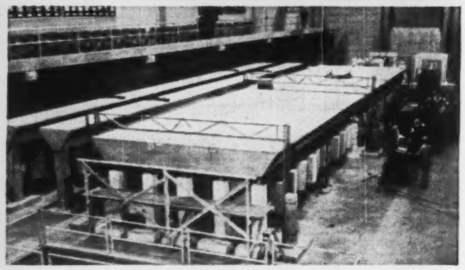
	Jan. 1961	Dec. 1960	Jan. 1960
Brick, common per M	40.05	−3.2	−1
Lime, hydrated finishing, per ton, CL	39.97	+2.8	+1.6
Structural clay tile, 3x12x12", per M, 2,000 up*	188.91	0	+2.2
Vitrified clay sewer pipe, std 12", per ft	1.356	−3.4	−4.9
Concrete sewer pipe, 12", per ft	1.419	−0.4	+2.0

*Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost		Building Cost		Volume	
1959	**1913=100**	**1949=100**	**1913=100**	**1949=100**	**1913=100**	**1949=100**
1960						
Jan.	811.84	170.19	554.40	157.59	432	125
Feb.	812.73	170.37	555.43	157.89	486	140
Mar.	813.26	170.48	555.16	157.81	533	154
Apr.	814.78	170.80	555.98	158.04	695	201
May	822.58	172.44	559.57	159.06	610	176
June	826.64	173.29	561.02	159.48	784	227
July	829.33	173.85	562.63	159.93	682	197
Aug.	830.18	174.03	562.17	159.80	631	182
Sept.	830.92	174.19	562.79	159.98	603	174
Oct.	829.58	173.90	561.45	159.60	591	171
Nov.	830.09	174.01	561.11	159.50	609	176
Dec.	830.61	174.12	561.50	159.61	503	145
1960 Average	**823.55**	**172.64**	**559.43**	**159.02**	**597**	**172**
1961						
Jan.	834.32	174.90	562.91	160.01	557	161
Feb.	834.27	174.89	562.93	160.02	.	. . .

The recently completed bridge over the Scioto River in Delaware County, Ohio, has four spans: 71 ft—82 ft—82 ft—71 ft. Beams are precast, pretensioned AASHO-PCI Type IV, spaced 7′ 6″ center to center. Design Live Load is Ohio C130 (57) which is comparable to AASHO H15-12. Contractor: Wander and Mason Corp., Worthington, Ohio. Designed by: Ohio Dept. of Highways under supervision of D. Henry Overman, Engineer of Bridges. **Fabricator of Prestressed Concrete Members: Great Lakes Structural Products, Toledo, Ohio.**



The use of continuity achieved with reinforcing bars in the slab, and the elimination of end blocks, were both based on a test program on prestressed concrete bridges begun in 1957 by Portland Cement Association's Research and Development Laboratories. Each of these items is a definite step towards greater economy in prestressed bridges.

Continuity in deck slab improves efficiency of prestressed

SCIOTO RIVER BRIDGE

In building the multiple span Scioto River Bridge on State Route 37, Delaware County, Ohio, highway engineers used a new method by which the existing economy and efficiency of standard precast and prestressed beams were even further enhanced.

The difference in fabrication and erection by the new method involves a modification to provide full depth diaphragms at supports, additional reinforcing steel in the slab over the supports and elimination of end blocks in the precast beams. The structure is thus made continuous for live load.

The advantages are several. For example: continuity distributes moments more evenly over the span. A smaller beam section can be used, while capacity is calculated to be even greater. Less prestressing steel is needed, and fewer joints mean less maintenance. Riding surfaces are smoother.

Roebling has long been active in fostering prestressed concrete construction, and has gathered a wealth of material and experience dealing with its every phase. This includes design data information, fabricating methods and, of course, the manufacture of the finest prestressing materials available. For information on prestressed concrete contact your nearby fabricator or Roebling's Construction Materials Division, Trenton 2, N. J.

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January Sets Contract Awards Record

Heavy construction contract awards are off to a fast start this year. In January, $1.66 billion worth of work went to contract. That sets a record for the month, tops the January '60 pace by 31% and improves on the weekly average rate of the previous month, December '60, by 11%.

Public construction was January's bellwether both in volume and percentage of increase. Volume of $876 million was 47% above the rather slow pace of January '60. But public volume did slip fractionally below the pace in December, which was one of the three months in '60 to register better than $1 billion in public awards.

Highways and public buildings led the way for public awards. Highway contractors booked $349 million in January. That's more than double the year-ago volume and represents the best weekly pace since September 1958. Public buildings (other than housing) gained even more spectacularly over a year ago—up 144% with a volume of $252 million.

The gains in highways and public buildings were strong enough to offset declines from the previous month ranging from 1% to 40% in every other category of public construction. Much of the gain can be credited to state and municipal agencies, which placed $641 million under contracts. That's a 53% improvement over a year ago and just about equal to the strong December pace. The federal government let $235 million worth of work, 33% more than a year ago, but 1% less than in December.

Private construction hit $785 million, 17% better than a year ago and 26% better than December. The leaders were industrial building and mass housing.

A flock of major plant projects lifted January industrial building awards to $327 million, 68% above January '60, and better than every month last year all but one month in '59.

Private mass housing posted $274 million in January, a 4% gain on December and a 6% improvement over a year ago. Significantly, this comes from a broad upsurge of moderate-size developments rather than from a few spectacularly large projects.

Commercial building contracts of $138 million lag behind both the preceding month and a year ago, slowing to the lowest weekly pace since February 1960.

All areas of the country except New England participated in the general gain over a year ago. Top region in volume was the Middle Atlantic, but the most spectacular percentage increase came in the South, which nearly doubled its volume over that of last January.

Little Change in Costs This Month

Construction and building costs are virtually unchanged from last month.

ENR's 20-cities Construction Cost Index for February is 834.27, compared with 834.32 a month ago. The 20-cities Building Cost Index for this month is 562.93, its January value was 562.91.

Both of these cost barometers are based on average building and construction cost in 1913 as 100.

What little cost news there was came from lumber prices.

During January, lumber yards in Boston, Cleveland and New York boosted Douglas fir 2x4 prices $2-4 per Mbf, as the filling of order backlogs trimmed inventories.

But bitterly cold weather kept new lumber demand from builders in check. And before the month was over, $2-$7 cuts in fir 2x4 prices in Chicago and San Francisco and a $4 per Mbf drop in Chicago's southern pine 2x4 prices pulled ENR's fir-pine w/r price average down to $119.53 per Mbf, a whisker below January.

Little change one way or the other is expected in building and construction costs in February. No wage boosts are scheduled for key construction trades in the 20 cities until March 1.

Engineering Construction Contracts for January

Four Weeks—Thousands of Dollars (000 Omitted)

	January, 1961						Total U. S.			
	New England	Middle Atlantic	South	Mid-West	Mississippi to Rockies	Far West	January 1961 (4 weeks)	January 1960 (4 weeks)	% Change '60 to '61	Canada January 1961
Public Works, Total	**29,880**	**211,674**	**187,532**	**188,592**	**144,999**	**112,975**	**875,652**	**594,546**	+47	**40,592**
Waterworks	370	6,289	2,146	2,621	5,417	3,385	20,228	19,944	+ 1	2,268
Sewerage	4,432	11,048	4,462	5,502	5,500	5,582	36,526	46,132	−21	2,656
Bridges	....	10,256	6,676	9,894	12,545	3,565	42,936	44,713	− 4	4,778
Earthwork, waterways	2,729	2,983	16,817	8,096	8,448	15,025	54,098	56,872	− 5	3,094
Streets and roads	6,211	74,776	71,352	117,892	49,619	29,545	349,395	154,746	+126	7,482
Buildings: Residential	3,997	11,591	10,281	4,467	3,213	4,832	38,381	50,998	−25	3,779
Other	7,199	77,864	61,297	32,152	40,432	32,706	251,650	103,249	+144	15,707
Unclassified	4,942	16,867	14,501	7,968	19,825	18,335	82,438	117,892	−30	828
State and Municipal	22,015	156,408	116,949	164,276	103,353	78,042	641,043	418,654	+53	33,843
Federal	7,865	55,266	70,583	24,316	41,646	34,933	234,609	175,892	+33	6,749
Private, Total	**45,898**	**184,293**	**126,218**	**68,777**	**241,732**	**117,996**	**784,914**	**670,514**	+17	**71,465**
Bridges	....	....	....	....	....	....	....	259	−100	....
Buildings: Industrial	1,938	72,050	46,462	18,131	133,418	54,921	326,920	195,079	+68	4,260
Mass housing	30,429	81,770	41,838	29,009	55,809	35,129	273,984	258,451	+6	16,284
Commercial	13,414	28,473	30,748	20,401	30,674	13,952	137,662	173,661	−21	12,921
Unclassified	117	2,000	7,170	1,236	21,831	13,994	46,348	43,064	+8	38,000
Total, Jan., 1961 — 4 weeks	**75,778**	**395,967**	**313,750**	**257,369**	**386,731**	**230,971**	**1,660,566**	....	+31	**112,057**
Total, Dec., 1960 — 5 weeks	95,675	373,939	279,959	272,956	483,754	369,104	1,875,387	....	.....	118,815
Total, Jan., 1960 — 4 weeks	101,556	339,847	159,388	202,086	243,147	219,036	....	1,265,060	.....	96,517
% Change '60 to '61	−25	+17	+97	+27	+59	+5	....	....	.....	+16

ENGINEERING NEWS-RECORD *reports continental U. S. construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $53,000; *other public works,* $88,000; *industrial buildings,* $110,000; *other buildings,* $400,000.

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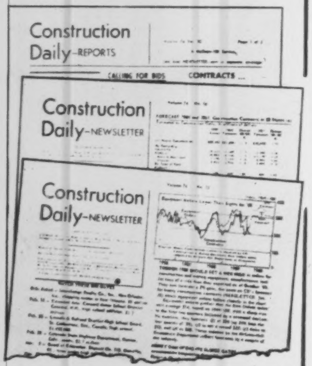
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Labor

JFK Revives Labor Peace Conference

- **The President intends to set up a council of businessmen and labor officials to promote cooperation on major problems.**
- **Such plans have failed in the past, but this one may be different—the Administration itself expects to play a major role.**
- **The Secretary of Labor and the Secretary of Commerce will alternate as chairman—and Presidential power will back recommendations.**

Within the next few weeks President Kennedy will tap leading business and labor officials for a White House industrial council. The assignment: to seek self-imposed restraints in collective bargaining and in wage and price levels that stem from contract settlements.

The President, in essence, is making a new stab at an old idea—the labor-management peace conference. This time, however, the full weight and persuasiveness of the Administration will be behind the experiment.

Such conferences in the past have hardly gotten off the ground. The most recent is the now-defunct conference of business and AFL-CIO leaders that assembled, briefly and unsuccessfully, under the Eisenhower Administration.

The notable difference this time is the role of the Kennedy Administration, which will not only assemble the key officials on both sides, but will take an active part in seeking solutions to critical disputes and easing the forces that lead to industrial strife—automation, displacement of workers, higher productivity and the like.

The new plan was announced by President Kennedy in the message he sent to Congress last week on economic recovery and growth (see p. 21).

It is an integral part of President Kennedy's economic recovery program, and perhaps essential to its success. For Mr. Kennedy has indicated that the nation can realize its economic potential only if employment, purchasing power and productivity can be boosted without promoting self-defeating price and labor cost policies—areas in which the responsible cooperation of labor and management automatically become a key factor.

The plan is the brain child of Labor Secretary Arthur Goldberg, who first advanced it two years ago while serving as AFL-CIO counsel and general counsel to the United Steelworkers. It has long been Mr. Goldberg's thesis that labor and management are fighting each other harder than ever, and that this can no longer be allowed to go unchecked in the face of foreign and domestic troubles.

The new council on labor-management relations will look like this:

- A 21-member commission, composed of seven members each from labor, management and the public, will be a permanent body to advise the President on solutions to key labor issues.
- Labor Secretary Goldberg and Secretary of Commerce Luther Hodges will alternate as chairman of the commission, with Mr. Goldberg taking the assignment the first year.
- The council will meet as a permanent, top-level body, to be assisted by separate committees in particular industries and in particular localities.

The idea is, first, to promote cooperation between both groups on such broad programs as automation. It will also, however, step into national emergency disputes before they erupt into strikes. It will recommend settlements to the President, who could then use the persuasiveness of the White House and public opinion to bring about a settlement.

At this point, Messrs. Goldberg and Hodges are seeking out likely candidates for the commission. While no names have been mentioned, members will come from such key industries as steel, construction, mining and the like. Such industries, too, are likely to be represented among the separate subcommittees or commissions.

The Construction Industry Joint Conference would be a typical example of the type of industry subcommittee the White House now has in mind. The construction group's approach to solving labor-management problems on work rules, featherbedding, and on jointly promoting the interests of the construction industry fit the pattern being proposed by the White House.

It has long been Mr. Goldberg's theory that such joint commissions have helped to promote better communications and cooperation, and can help to foster better bargaining when the time comes, without getting in the way of negotiations. The White House commission will specifically keep its hands off the collective bargaining area.

There are elements in the Kennedy plan that cause some wariness on both sides. Union leaders, who generally back the joint commission idea, are likely to object to any implication that "unsound" wage increases are a cause of economic dislocations. Management, in turn, has been lukewarm at best in approaching a government commission, on the theory that it is harder to resist union demands with the government sitting in.

Formation of a President's Advisory Committee on Labor-Management Policy is only one of the labor-management strings to Mr. Kennedy's bow for achieving economic recovery and growth.

In his message last week, he urged Congress to:

- Enact a temporary program for extending the duration of unemployment insurance benefits, the cost of which would eventually be repaid by payment of the present tax on on a higher base. (The President said he would later recommend a plan for "permanent reform" of the unemployment insurance system.)
- Make improvements in the Social Security program, raising the present tax by ¼ of 1% in 1963.
- Increase the minimum wage in two steps to $1.25, and extend coverage to "several million workers" not now covered.

Two different House committees immediately scheduled hearings for this week on the minimum wage and temporary unemployment insurance proposals.

Court Curbs Union Supervisors

Federal court in a Detroit case explores dangers of hiring foremen who are active union members

Contractors who give supervisory jobs to active union members may be violating the federal labor law. It may be hard to tell, however, whether a violation in fact exists.

That is the gist of a District of Columbia Circuit Court of Appeals decision that substantially endorses the National Labor Relations Board approach to the conflict of interest issue.

Specifically, the court ruled that:

- An employer may properly be held responsible for unlawful interference in the affairs of a union and with the rights of its members because of participation by his foremen, superintendents or other unionized supervisory personnel in the affairs of the union.
- The law does not deny supervisors the right to retain union membership in order to protect their access to jobs, seniority rights or fringe benefits, provided the nature of their jobs and union activity do not amount to employer interference with the rights of union members.
- Each case must turn on its own particular facts. The nature of the supervisory position is one of the important considerations.

The case before the court involved the use of unionized supervisors by members of the Detroit Plumbing and Mechanical Contractors Association and by several individual construction firms.

One of the supervisors—a general foreman—was president of the local plumbers union. Another was a member of the local's executive board, and one of the others was a member of the local's negotiating committee. As supervisors on various jobs for various contractors, they generally had some power to hire, fire, lay off, discipline and adjust grievances.

There was some evidence, the court said, that members of the local were afraid "to oppose policies in union affairs advocated by the supervisors for fear of losing their jobs the very next day when the supervisor resumes his role in the company and takes up the task of hiring and firing."

The court found, with one exception, that the dual activities of the supervisors were unlawful. The one exception—and that was sent back to the board for reconsideration—involved a supervisor who held no union office but was merely an "active member" who attended meetings and voted.

From the contractor's point of view, the important aspect of the decision is that the violation can occur even where the employer and his supervisors have done nothing to amount to interference in the ordinary sense of the word. It is not necessary, under the court's ruling, to show that the employer authorized or ratified the union activity of his supervisors, nor need the presence of ulterior motives or labor-management collusion benefiting the employer be shown.

The critical point of illegality, the decision indicates, is reached whenever the dual activities of card-carrying supervisors have the potential of injecting employer compulsion, domination or influence into union affairs.

The court explained that the law seeks to insulate the jobs of workers from their organizational rights and to free the bargaining process from "all taint" of employer influence. Crux of the problem, it said, is the "impact upon the rank-and-file journeymen members of participation and leadership within the union by supervisors."

Under both the Taft-Hartley and Landrum-Griffin laws, the court noted, every worker has "an absolute right to make his views known to his fellows and to urge his position to them. In our view, anything which might tend to inhibit that right is 'interference.' If intra-union participation by supervisors tends to inhibit this right, then such participation is 'interference' unless it is protected by the Act." The court found that it is not protected.

"The 'interference' in this case," the court observed, "flows directly from the supervisors' company positions and their opportunities to exercise certain exclusive prerogatives of management (hiring, firing, disciplining, etc.). When this power is placed in the hands of a particular employee, the employer has an obligation to insure that the power will not be used contrary to law and he may not claim that he did not know of the employee's intra-union activities."

This does not mean that "every supervisory employee is to be barred from active participation in a journeymen's union," the court said. It noted that the construction industry has an "extreme upward and downward flexibility in job positions" and that one who is working today as a foreman may find himself working next week as a journeyman.

To accommodate this flexibility, the NLRB has adopted the practice on a case-by-case basis of permitting supervisory workers to retain basic union membership. The court approved the practice as long as the board determines the extent of participation to be permitted in an individual case, taking into account the nature of the supervisory position.

It specifically suggested that the board consider what management rights have been delegated to the supervisor, the permanency of his job, and the extent to which his position is properly included in or excluded from the bargaining unit.

Increase in Productivity Is Noted by Contractors

Contractor associations in southern Illinois say they have noticed a "marked improvement" in the work efficiency of union construction workers in East St. Louis.

A spokesman for the Council of Contractor Associations in Granite City reported last week that there was "virtually no time lost" in 1960 because of jurisdictional disputes, and that "on-the-job productivity" also showed further improvement. He said, for example, that one out-of-state contractor had found a "20 to 25% increase in efficiency" as compared to the situation that prevailed four years ago.

The East Side industrial district of St. Louis once had a reputation for high construction costs, according to the council's executive director, John C. Fallon. But in 1958, Mr. Fallon said, the local unions and contractors signed a pledge "to eliminate featherbedding and reduce unnecessary labor costs."

The council, Mr. Fallon added, will continue its efforts to improve labor relations and construction efficiency.

Formed in 1959, the council embraces both general and specialty contractors. Members are the East St. Louis Mason Contractors Association, Southern Illinois Builders Association, Southern Illinois Plastering Contractors Association, Construction Employers Council, Southern Illinois Electrical Contractors Labor Council, Southern Illinois Contractors Association and the Illinois Chapter of the National Electrical Contractors Association.

ALPHA

BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

news and notes from the field

Tips On Building Watertight Concrete Structures

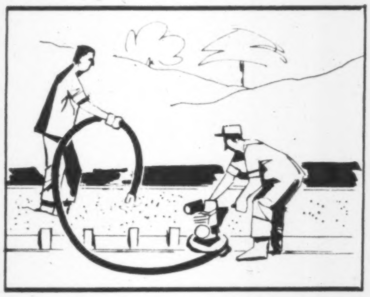
The increasing use of concrete for swimming pools, basement playrooms, industrial sub-surface garages and similar structures continues to reflect the growing interest in watertight concrete. Moreover, of the many questions asked Alpha Field Engineers, those about watertight concrete today are one of the most common.

Watertight concrete can be produced without undue difficulty when proper emphasis is placed on good design, good concrete and good workmanship. Extensive testing and careful examination have revealed that the most common reasons for leaky concrete are **inferior workmanship, poor materials and too lean a mix.**

Good Concrete:

Modern ready mix concrete plants today are equipped to furnish concrete of the very highest quality, but the user must specify the mix and make sure the concrete is not ruined on the job by someone insisting on additional water. The most modern mixing plant, the best materials and the best mix design mean nothing when the water content is not controlled and the concrete is improperly placed and cured.

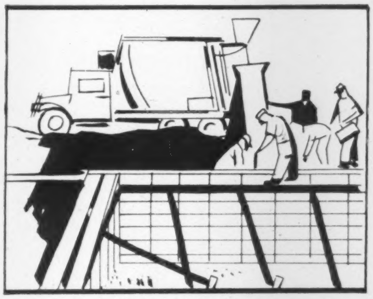
The Right Mix:



Use a quality concrete mix and place it in even layers not more than 18 in. deep. Avoid honeycombing by adequately spading or vibrating each layer.

Experience has indicated that for such structures as tanks and reservoirs the concrete should contain not more than 6 gal. of water per sack of cement. For concrete in very heavy sections such as dams, the water may be increased to 7½ gal., while for thin sections it should be reduced to 5 gal. These amounts include the water which is introduced as surface moisture in the aggregate. Coarse aggregate usually contains little if any moisture, but the sand often contains a considerable amount of water.

Avoid Segregation in Placing Concrete:



Concrete should be delivered at a number of points around the form to avoid chuting over long distances. This prevents segregation, a source of possible leaks.

Of all the steps in watertight concrete work, handling, placing and compacting in the forms are among the most important. Concrete should not be allowed to drop freely more than 5 or 6 feet, as segregation is likely to occur if it falls through a greater distance. Flat chutes should not be used even for short distances. **Chutes should be deep with rounded bottoms, and constructed of or lined with metal.** Buggies should be operated on smooth runways. Buggies equipped with pneumatic tires reduce segregation. Dumping a large quantity of concrete in one place and then causing it to flow horizontally over a long distance in the form is not good practice and should never be done. Concrete should be distributed by placing in uniform layers 1 foot to 18 inches thick, spading or vibrating each layer to consolidate the concrete.

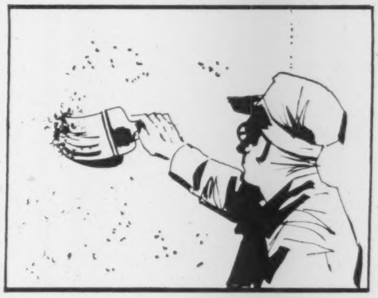
Construction Joints:

One of the frequent sources of difficulty has been at construction joints. Wherever possible, the work should be so planned that placing of concrete will be continuous. In large structures expansion joints are sometimes provided, but placing should be continuous between joints. Where a construction joint must be made, precautions should be taken to secure good bond between the layers. If the structure is to be subjected to water pressure such as in a tank and if a construction joint is to be made between hardened and fresh concrete, a waterstop should be installed.

Curing:

Keeping the concrete wet for at least 7 days when normal portland cement is used, or 3 days if high-early strength portland cement is used, should be required on all watertight construction.

Surface coatings are helpful in overcoming leakage on some structures, but cannot be expected to overcome faulty joints or defective areas. An effective surface treatment is the application of a grout of equal parts portland cement and fine sand mixed to the consistency of paint and applied with brushes. The concrete should be damp when this is applied and the coating should be dampened as soon as the cement has set sufficiently so that it will not be washed off. It should be kept damp at least 24 hours.



Use whitewash-size brush to apply surface coating.

More Information

Your Alpha Field Engineer can answer your questions on watertight concrete construction and help with any other problems involving the use of Alpha cement. Reprints of this advertisement are yours for the asking.

ALPHA

PORTLAND CEMENT COMPANY

Alpha Building, Easton, Pa.

A New Look at the Steel Strike

Study committee finds impact of 1959 steel strike was exaggerated; advises against new controls

The U.S. Department of Labor has released the Livernash report on collective bargaining in the basic steel industry. Former Secretary of Labor James P. Mitchell, who commissioned the study after the 116-day steel strike in 1959, said the basic conclusions are "noteworthy."

The committee, headed by Harvard Professor E. R. Livernash, found, among other things, that:

- The long-range economic effects of past steel strikes have left no permanent scars on our economy.
- Bargaining settlements in steel have not had a dominant influence on wage trends in the economy.
- Steel strikes do not warrant the public consternation and outcry that have occurred in the past.

The committee's fundamental conclusion was that collective bargaining be given free play and that untimely government intervention be avoided.

Minor legislative changes would accomplish little in preventing future strikes, according to the report, and the problems involved do not indicate a necessity for the more drastic forms of government intervention that have been proposed.

"In the light of these conclusions," the committee stated, "it is hoped that the public and its representatives will be very cautious in approving legislative changes affecting the existing collective bargaining system."

The study indicated that government intervention tends to corrode collective bargaining because it usually has the effect of postponing the economic pressures that are the ultimate incentive to the settlement of all major labor disputes. The less ready the government is to intervene, the committee said, the more likely the parties are to settle themselves.

Of all the forms of public intervention, the committee cited mediation as the most sensible. It said mediation preserves the element of voluntarism to a greater degree than any of the others.

Fact-finding, with or without recommendations, seizures, cooling-off injunctions, compulsory arbitration, and even the "arsenal of weapons" idea that President Kennedy suggested during his campaign were given short shrift. For the most part, these militate against a peaceful settlement, it was pointed out, and provide no real answer to the fundamental economic problems involved.

Several sections of the report are devoted to employment costs, productivity, prices and inflation—issues that created some of the acrimony in the 1959 strike.

Among the committee's findings and observations were these:

- The search for a comprehensive formula approach to national wage policy is not likely to be fruitful.
- Productivity—when expressed as output per manhour in steel—is not by itself a very good guide to wage policy.
- Unions did not create what is called the wage-price spiral.
- During the last 20 years, employment costs per unit of output in steel have risen higher for all employees than they have for wage employees only. This is because of the increase in the relative importance of administrative, professional and clerical personnel.
- Steel prices rose 178% between 1940 and 1959. Increases in employment costs account for only about a third of this.

Law Bars Union Control Over Hiring Practices

South Carolina's right-to-work law does more than outlaw the union shop, according to the South Carolina Supreme Court. It also prevents an employer from firing an employee because a union does not approve him.

The law provides that "the right of persons to work shall not be denied or abridged on account of membership or nonmembership in any labor union or labor organization."

"To hold that the prohibition was directed exclusively against the requirement of union membership or nonmembership as a condition of employment," the court said, "would be to disregard the prohibition . . . and to permit frustration of the legislative purpose. . ."

The court said it thought the law was clearly directed at two evils. It called one "union control of employment" and the other a "boycott of union labor."

Result of the decision was reinstatement of a lawsuit filed by a discharged employee against Miller Electric Co. and the International Brotherhood of Electrical Workers, AFL-CIO. The employee claimed he had been discharged because the union did not want him.

OFFICIAL PROPOSALS

Bids: February 20, 1961

Notice to Bidders
City of Sherrill, New York
Sewage Treatment Plant

Sealed proposals for construction of a Sewage Treatment Plant for the City of Sherrill, New York, will be received by the Clerk of the City Commission of the City of Sherrill, New York, at his office in the City Hall until 8:00 P.M. on February 20, 1961 and then will be publicly opened and read aloud.

Separate sealed proposals will be received for the following:

Contract No. 1—"General Construction"
Contract No. 2—"Heating and Ventilating"
Contract No. 3—"Plumbing"
Contract No. 4—"Electrical"

The Sewage Treatment Plant is to be located on the south side of West Hamilton Avenue, adjacent to Oneida Creek and the existing outfall sewer. Construction of the Plant will include all treatment units, buildings, equipment, utilities, walks, drives, access roads, grading, landscaping, fencing; manholes, relocation of a portion of the outfall sewer, and everything required as set forth in the Contract Documents.

Information for Bidders, Plans and Specifications may be examined at the office of the City Clerk, City Hall, Sherrill, New York, or at the office of Stearns & Wheler, Civil and Sanitary Engineers, 99 Albany Street, Cazenovia, New York. Copies thereof may be obtained at the office of Stearns & Wheler upon deposit of $30.00 for each set (each set covers all four Contracts), to be held as security for their return pursuant to law. Any bidder, upon returning such set in good condition within fifteen (15) days after receipt of bids, will be refunded his full deposit and any non-bidder, upon so returning such set, will be refunded $15.00.

For the convenience of prospective bidders, subcontractors and material men, plans and specifications will also be placed on file at the F. W. Dodge Corp. and Syracuse Builders Exchange, 1054 James Street, Syracuse, New York.

Each proposal must be accompanied by the deposit of cash, bank draft or certified check payable to the City of Sherrill, New York, in the amount of five (5%) per cent of the total Contract price. Bid Bonds are not acceptable.

Upon acceptance of his bid, if the successful bidder fails to enter into a Contract with the City of Sherrill, New York, then the monies represented by such cash, draft or certified check shall be regarded as liquidated damages and shall be forfeited and become the property of the City of Sherrill.

The final awarding of the bid and contract is subject to the approval of the United States Department of Health, Education & Welfare.

The City of Sherrill reserves the right to waive any informalities in or to reject all bids.

Peter G. Noto, City Clerk
City of Sherrill
New York

Dated: January 23, 1961

District of Columbia—Building Construction—Dept. of Bldgs. & Grounds, D. C., Jan. 26, 1961. CONSTRUCTION OF ADDITION TO BARNARD ELEMENTARY SCHOOL, 5th and Decatur Sts., N.W., Washington, D. C. (Invitation No. C-6179-B), (Wage rates have been predetermined by Labor Dept.) Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Rm. 404, 499 Pa. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer, (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 3:00 PM EST, Feb. 28, 1961, in Rm. 424, 499 Pa. Ave., N.W.

OFFICIAL PROPOSALS

Bids: February 23, 1961.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and Canal Law and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 23rd day of February 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, L. Ketchum, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Madison	M 61-1	Village of Canastota: Peterboro St.-West Old Erie Canal	0.04	Enclosing A Portion of The Old Erie Canal	$4,000 Plans $5	$71,000
Montgomery	US 107	Village of Fort Plain: Lock 15E—Erie Canal	....	Replacing Lock Gates and Sills	5% of Bid Plans $10	Confidential
Oneida (Rte. 69)	FARC 61-14	Camden Taberg, Pt. 2, S.H. 5139; Thomson Corners-Taberg, S.H. 1158; Rome-Taberg, S.H. 563 Project F-635(6), S-597(1) and U-635(6)	6.41	Cem. Conc. Pavt. = 6.01 Mi.; Asph. Conc. Ty. 1 = 0.40 Mi.; Prestressed Conc. Beam Bridge 5 Sps., 343.9′ Tot.	$120,000 Plans $5	2,190,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe	M 61-4	City of Rochester: Sector Gate 2 Court St. Dam on Genesee River	....	Cleaning & Painting Sector Gate 2	$400 Plans $5	7,600
Monroe (Int. Trg. Rte. 490)	FISH 61-6 FASH 61-7	Interstate Rte. Connection 580 Rochester Western Expressway (Buffalo Road to Howard Road) Elm Grove Rd. Connection Project I-IG-490-2(21); U-783(6)	3.08 (5.04 Acc.)	9″ Cem. Conc. Pavt. 2 @ 24′ = 2.88 Mi.; Asph. Conc. Ty. 1A = 0.04 Mi.; Misc. Work = 0.16 Mi.; Access = 4.15 Mi., Cem. Conc. Pavt.; 0.86 Mi. Asph. Conc. Pavt. Type 1A; 0.03 Mi. Misc. Work; 8 H.G.S. Comp. I-Beam; 4 Sps. 186.8′ Tot.; 4 Sps. 186.8′ Tot.; 3 Sps. 179′ Tot.; 3 Sps. 171′ Tot.; 3 Sps. 195.8′ Tot.; 3 Sps. 133.5′ Tot.; 3 Sps. 159.7′ Tot.; 3 Sps. 202.3′ Tot.	$240,000 Plans $10	4,375,000
Monroe & Orleans	M 61-2	City of Rochester: West Guard Lock Bridge E-186, Orrs, Over Erie Barge Caal	....	Cleaning & Paint. Structural Steel on West Guard Lock; Cleaning & Painting Bridge	$500 Plans $5	9,300
DISTRICT No. 6, Wm. J. Dennis, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Steuben (Rte. 15 & 371)	FARC 61-1	Cohocton-Wayland, Pt. 1 S.H. 1104; Avoca-Wallace-Cohocton, S.H. 5564; Cohocton-Naples, Pt. 1, S.H. 5611 Project F-627(12); S-523(1)	1.52	8″ Cem. Conc. Pavt. 24′ = 1.32 Mi. Asph. Conc. = 0.17 Mi. Misc. Work = 0.03 Mi.	$35,000 Plans $5	653,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, New York						
Clinton (Int. Trg. Rte. 87)	FISH 61-5	Interstate Route 502 Sections 7A3, 7A4, 7A5 (Route 22 to Salmon River Rd.) Project I-IG-87-4(11)	9.08 (3.44 Acc.)	Asph. Conc. Ty. 1A = 8.96 Mi.; Asph. Conc. Type 1A (Access) = 3.44 Mi. Misc. Work = 0.12 Mi.; H.G.S.S. Twin 3 Span Prestressed Conc. Br.: 2 Sps. @ 42.7′; 2 Sps. @ 41.6′; 2 Sps. @ 39.2′ H.G.S.S. Twin; 3 Sps. Prestressed Conc. Br.; 2 Sps. @ 41.2′; 2 Sps. @ 42.4′; 2 Sps. @ 42.3′; Twin 2 Span Comp. WF Beam Br. 4 Sps. @ 57′; Prestressed Conc. Br. 5 Sps. 254.7′ Tot.; R.R.G.S. Twin 3 Span Comp. WF Br. 6 Sps. @ 82.1′; Prestressed Conc. Br.5 Sps. 295.4′ Tot.	$390,000 Plans $10	6,679,000
Clinton	S.H. 61-4	Twin Bridges Road (Interstate Route 87 to US Route 9)	0.52	Asph. Concrete Type 1A	$9,000 Plans $5	163,000
Jefferson (Int. Trg. Rte. 81)	FITS 61-7	Interstate Rte. 505 (Section 7AB-1) (Pierrepont Manor to Oswego County Line) Project I-81-3(21)	4.60 (6.88 Acc.	Traffic Signs	$2,200 Plans $5	40,000
DISTRICT No. 8, K. G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Westchester (Rte. 9)	FARC 61-15	Croton River-Peekskill, S.H. 657, Croton-on-Hudson Village: Riverside Ave., S.H. 1207	2.75 (2.71 Acc.)	9″ Cem. Conc. Pavt. = 2.54 Mi.; Misc. Work = 0.21 Mi.; Access = 2.26 Mi. Cem. Conc. Pavement and 0.45 Mi. Bit. Double Surface Treatment; 2 H.G.S. Comp. Gird. 3 Sps. 184.81′ Tot.; 4 Sps. 238.86′ Tot.; Ped Overpass I-Beam, 4 Sps. 213.92′ Tot.	$265,000 Plans $5	4,852,000
Westchester (Rte. 9)	T.S. 61-2	Broadway-Hastings-Dobbs Ferry-Mt. Pleasant-Tarrytown-No. Tarrytown, S.H. 9206	0.59	Traffic Signs and Delineators	$1,300 Plans $5	24,000
DISTRICT No. 10, A. M. Sarr, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau	FAWOBE 61-1	Wantagh-Oyster Bay Expressway, Cont. 2 (Hempstead Turnpike-Old Country Road) Project U-UG-1110(3)	3.29 (3.58 Acc.)	9″ Cem. Conc. Pavt. with Carbon Black = 3.09 Mi.; Misc. Work = 0.20 Mi.; Access = 1.90 Mi. Cem. Conc. Pavt. and 1.68 Mi. Asph. Conc. Pavt.; 5 H.G.S. Comp. W.F. Beam; 2 Sps. 142.2′ Tot.; 2 Sps. 146.5′ Tot.; 2 Sps. 115.2′ Tot.; 1 Sp. 76.3′ Tot.; 1 Sp. 57.8′ Tot.; 2 R.R.G.S. Steel Girder; 2 Sps. 138′ Tot.; 1 Sp. 104′	$330,000 Plans $10	6,001,600
Nassau (Rte. 106)	R.C. 61-11	Jericho-Oyster Bay, S.H. 9021	0.17	Misc. Drainage Work	$7,000 Plans $5	122,000
Nassau & Suffolk	NSP 61-1 SAGSP 61-1 SMSP 61-1	Northern State Parkway Sagtikos State Parkway Sunken Meadow State Parkway	27.26	Roadside Development, Drainage, Misc. Work	$15,000 Plans $5	280,000
Nassau & Suffolk	SSP 61-1	Southern State Parkway	5.82	Landscaping	$7,000 Plans $5	131,000
Suffolk (Rte. 27)	T.S. 61-8	Sunrise Highway Extension FASH 59-13 (S.H. 1883 to Springdale Road	3.98 (5.39 Acc.)	Traffic Signs and Delineators	$1,700 Plans $5	30,000
Suffolk (Rte. 114)	R.C. 61-12	Sag Harbor-Easthampton, S.H. 846	5.29	Asphalt Concrete	$42,000 Plans $5	776,000
Suffolk (Rte. 25A)	R.C. 61-16 FASS 61-1	Smithtown-Port Jefferson, S.H. 5232A, Elimination of Grades of The Long Island R. R. and Nicolls Road (C.R. 97) Project SG-571(1)	1.67	9″ Cem. Conc. Pavt. = 1.10 Mi.; Misc. Work = 0.26 Mi. Cem. Conc. Pavt. with Carb. Black = 0.07 Mi.; Asph. Conc. = 0.24 Incl. R.R.G.S.—Thru Plate Girder; 2 Sps. 127.5′ Tot.	$70,000 Plans $5	1,295,000
Suffolk	FIIB 61-1	Fire Island Inlet Bridge (Captree State Park to Fire Island State Park) Contract No. 1, Substructure	0.87	Bridge Substructure Comprising 2 Abutments and 26 Piers; 4,232.7′ Total	$150,000 Plans $5	2,760,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for ~~the~~ sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5497) will be received at St. Paul, Nebraska, until 10 a.m., Central Standard Time, March 14, 1961, for furnishing labor and materials for Earthwork and Structures, Farwell Main Canal, Station 766+00 to Station 1730+10, Farwell Lower Main Canal, Station 0+00 to Station 254+75, Farwell Unit, Nebraska, Missouri River Basin Project. Location near St. Paul, Nebraska, in Howard County. Principal items are Excavation—730,000 cu. yds.; Compacting embankments—214,000 cu. yds.; Concrete in structures—3,000 cu. yds.; and other work. Completion time 1,000 days. For particulars, address Bureau of Reclamation, P. O. Box 143, St. Paul, Nebraska; Building 46, Denver Federal Center, Denver 25, Colorado; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

OFFICIAL PROPOSALS

Bids: March 14, 1961

Philadelphia, Penna. Procurement Department Water Department

Sealed bids will be received in Room 313, City Hall Annex, until 2:30 P.M. (E.S.T.) on Tuesday, March 14, 1961, and opened at that time, for Bid No. 2717—Work No. SD-254-SW.

Construction of Intercepting Sewer in Right of Way of 60th Street Branch of Philadelphia-Baltimore and Washington Railroad from 67th Street to the Right of Way of Chester Branch of the Reading Company and in Right of Way of Chester Branch of the Reading Company from Right of Way of 60th Street Branch of Philadelphia-Baltimore and Washington Railroad to 56th Street Lower Schuylkill West Side Intercepting System.

PRINCIPAL ITEMS OF WORK

Excavation in Tunnel	6,972 lin. ft.
Excavation—Open Cut—Shafts—Manholes and Sewer	1,300 cu. yds.
3 feet 6 inches diameter Concrete Sewer in Tunnel	1,977 lin. ft.
3 feet diameter Concrete Sewer in Tunnel	4,995 lin. ft.
Vacuum Processing in Tunnel	19,220 sq. ft.
Manholes	13

Proposal forms, questionnaires and specifications may be obtained from the Water Department, in Room 1132, City Hall Annex, Juniper Street and Filbert Street, Philadelphia 7, Penna. Blueprints of plans may be purchased at bidder's expense, directly from the Keystone Blue Paper Company, 1230 Arch Street, Philadelphia 7, Penna.

No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, Room 1113, City Hall Annex, at least one (1) week prior to the date of opining bids.

Each proposal must be accompanied by security in form and amount as set forth in the proposal form.

Bids: March 2, 1961

Sump Pumps and Piping Insulation in Manholes

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT

CENTRAL HEATING AND REFRIGERATION PLANT DISTRIBUTION SYSTEM

CONTRACT NYA-110.017

Sealed proposals for installation of sump pumps and the insulation of piping in certain manholes in the Central Heating and Refrigeration Plant Distribution System at New York International Airport will be received at the office of the Chief Engineer of the Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Thursday, March 2, 1961, at which time said proposals will be opened and read in Room No. 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman
New York, February 9, 1961

District of Columbia—Bldg. Construction—Dept. of Bldgs. & Grounds, D. C., Jan. 24, 1961. CONSTRUCTION OF CATHERINE R. WATKINS ELEMENTARY SCHOOL, 12th and "E" Sts., S.E., Wash., D. C., (Invitation No. C-6178-B). (Wage rates have been predetermined by Labor Dept.). Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Pa. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer. (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 3:00 PM, EST, Feb. 21, 1961, in Rm. 424, 499 Pa. Ave., N.W.

OFFICIAL PROPOSALS

OFFICIAL PROPOSAL

RATE: $2.70 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, P. O. Box 12, New York 36, N. Y.

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ADDRESS BOX NO. REPLIES TO: Box No.
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Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 11: 255 California St.

• *POSITIONS VACANT*

General Superintendent—Must be completely experienced in all phases of grading, paving, site work and road construction. Salary open, yearly employment, two weeks vacation. All replies confidential. Send complete resume to The Thomas Colla Company, 251 Broad St., Manchester, Conn.

Guard Rail Superintendent—Must be qualified to handle field reports, payroll forms and exercise independent judgment pertaining to problems of guard rail installation. Salary open. P-5955, Engineering News-Record.

Civil Engineer—Estimator—Must be completely experienced in site work take-offs. Salary open, yearly employment, two weeks vacation. All replies confidential. Send complete resume to The Thomas Colla Company, 251 Broad St., Manchester, Conn.

Construction Supervision. Construction engineer for inspection and supervisory work on electric power lines and substations. Opportunity for permanent employment and advancement with well-known consulting engineering firm. Send resume to P-6005, Engineering News-Record.

Engineer-Director of Specifications Department. Large Midwest consulting firm has immediate opening for capable man with broad experience in specification writing for all branches of building construction work. Must also possess administrative ability. Moving expenses paid. Send complete resume of educational background and experience, including personal qualifications to P-6053, Engineering News-Record.

Wanted Superintendent or Assistant Superintendent for hydraulic dredging firm in midwest. Experience on State and Corps of Engineer contracts preferred. Excellent opportunity for right man. State experience and references. All replies confidential. P-6067, Engineering News-Record.

Village Engineer—The Village of Monona is accepting applications for the position of Village Engineer. Education and experience requirements are: graduate civil engineer, with general municipal experience, should be State of Wisconsin registered or eligible therefor within one year. Salary open. Write for application to E. J. Lottes, Village Administrator, 5211 Schluter Road, Madison 4, Wisconsin. Population of Village of Monona—8200.

POSITIONS VACANT

Supt. and Foreman—Storm drain and flood control—Experienced large diam. pipe, excavation and conc. box. Proven organizer and producer—So. Calif. P-5957, Engineering News-Record.

Civil Engineering Graduate for permanent position in contractor's engineering department starting as field engineer on highway and bridge projects in New York-New England area. Send complete resume with anticipated salary to: P-6054, Engineering News-Record.

Survey Party Chief experienced in highway and bridge layout for New York-New England area. Send complete resume with anticipated salary to: P-6055, Engineering News-Record.

Structural Engineer-Experienced in design of bridges and buildings in steel and concrete. Submit resume and salary requirements. Permanent position with well established consulting firm. Location, Pennsylvania. P-6044, Engineering News-Record.

Engineer. Experienced in design to take charge of sanitary engineering, designing and drafting office. Salary open. Location Park Avenue, NYC. P-6039, Engineering News-Record.

Engineer—Estimator—Experienced in plant, mill and highway bridge construction. Location — Jacksonville, Florida. Send complete resume with anticipated salary to: P-5806, Engineering News-Record.

Electrical Engineer familiar with electric power systems. Permanent employment with opportunity for advancement in long-established consulting engineering firm. Write or call Stanley Engineering Company, Muscatine, Iowa.

Estimator—General Superintendent—Experienced sewerage and waterworks construction. Engineering background desirable. Medium size contractor specializing all phases this type construction. Midwest location. Send complete resume. P-5970, Engineering News-Record.

Superintendent for roads, streets, bridges, levees, sewers, etc. in the Midwest within 100 miles of St. Louis. Give resume of Experience, references, age, marital status and salary expected. Engineering degree desirable but not essential. The right man could go far in this organization. P-6014, Engineering News-Record.

Wanted—Engineer with field inspection experience on general and heavy construction projects. For overseas assignment with long-established consulting engineering firm. Permanent employment at salary commensurate with ability. Please send resume and salary requirements to P-5895, Engineering News-Record.

(Continued on opposite page)

CHIEF DRAFTSMAN

Large fabricator of structural steel for buildings, bridges, dams, locks, etc., located in deep south, seriously looking for qualified Chief Draftsman.

Must assume complete responsibility for operation of drafting room of over fifteen men. Prefer Civil Engineer with at least ten years' experience in structural detailing, capable of commanding the co-operation of his men and obtaining the highest quality of workmanship.

We are seeking a highly trained man with executive capacity, and expect to pay the right salary for the right man.

In reply give full experience record and educational background, stating age, marital status and salary expected.

P-6037, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

Structural Steel and Miscellaneous Iron Sales Engineers

Large fabricator in Cleveland, Ohio needs one structural steel and one miscellaneous iron salesman. Excellent positions for the right men. Salary plus bonus and other benefits.

P-6034, Engineering News-Record
Class Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

• *POSITIONS VACANT*

(Continued from opposite page)

Senior Cost Engineer. Must be familiar with the Uniform System of Accounts for Electric Utilities. Duties will consist of analyzing completed major construction projects for an Electric Utility. Experience with the Federal Power Commission or a State Public Service Commission would be desirable. Some experience with the Property Record Department of any Electric Utility would also be an asset. Please send complete information on experience, references, salary requirements, and availability. Indianapolis Power & Light Co., 25 Monument Circle, Indianapolis 6, Indiana, Employment Division.

Graduate Engineer—Wanted as superintendent. Also assist in sales work and estimating. Permanent. The A. S. Johnson Company; 3311 Jennings Road; Cleveland 9, Ohio.

Construction Estimator wanted for South Jersey and Delaware Valley Area—capable of handling all phases of estimating (takeoff, pricing, Sub Contract work, etc.) for medium size General Contractor. Salary commensurate with experience. Reply to P-6076, Engineering News-Record.

Office Manager—Experienced in all phases administration heavy construction including cost accounting and purchasing. Indicate Availability, Salary requirements New Orleans Area. P-6098, Engineering News-Record.

Chief Estimator: To supervise entire activity of Contracts Engineering group. He will be responsible for administrating maintenance of schedules, assignment of work, salary administration, institution of new forms and procedures, and all other matters pertaining to the total supervision of this group. A department of a large steel plate fabricator in the Chicago area. The candidate must have a technical degree from an accredited university —preferably mechanical or civil. In addition, he must have specific experience as an estimator—preferably on general construction or refinery projects. His background must include at least 5 years of increasing supervisory responsibility. This position carries a twelve to fifteen thousand dollar a year starting salary. Sending complete resume, please reply to P-6105, Engineering News-Record.

Senior Contracts Estimator: A large steel plate fabricator in the Chicago area requires an engineer to be responsible for the development of standards and procedures which permit the company to bid as a general contractor where our products are a dominant portion of the job. He will be responsible for developing costs of foundations, earth work, painting, auxiliary electrical, etc. In addition, this position includes participation in bids prepared as joint ventures. This position will carry supervisory responsibilities by projects. A candidate should have a technical degree from a fully accredited university — preferably civil engineering with a major in structures, soil mechanics or concrete. He should have at least 5 years of estimating experience on general construction projects. In the absence of full academic compliance, specific experience may be substituted. This position carries a nine to twelve thousand dollar starting salary. Sending complete resume, please reply to P-6106, Engineering News-Record.

(Continued on following page)

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STRUCTURAL DESIGN ENGINEER—Permanent Position. Reinforced concrete and steel structures for water and sewage treatment plants for large Utility Company.

College degree required. Engineer's license preferred but not necessary. Minimum design experience 5 years.

Company paid pension plan. Insurance and other Company benefits.

State full particulars and salary requirements in letter.

Location—Philadelphia, Pennsylvania.

P-6032, Engineering News-Record
Class Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

CONSTRUCTION SUPERINTENDENT

Minimum 15 years experience in chemical plant construction. Graduate civil or mechanical engineer required. Must be willing to relocate within U. S. Immediate openings.

Reply fully and in confidence to:

J. W. FEAMSTER
Personnel Manager

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REPRESENTATIVES or DISTRIBUTORS for STRUCTURAL STEEL PRODUCTS

Fabricator of unique line of stock-designed structural steel products seeks aggressive representative outside New England area now contacting architects, structural engineers, contractors, builders, etc. Should have own qualified estimators, detailers, draftsmen and erectors available. Product advertisements draw tremendous response from all over the world, and initial leads will be furnished.

Write **RW-5891**, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y.

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A world wide organization has an opening for a top level construction engineer to head a rapidly expanding contracting operation.

This man must be a graduate engineer, have 15 to 20 years of heavy construction experience and be capable of handling everything from; estimating, bid preparation and contract negotiation to final completion. Experience in Dams, Ports, Highways and Bridges, Airports, Industrial and Residential Buildings is essential.

Qualifications must be top grade and salary is open. Opportunity unlimited for the right man.

Replies will be held in the strictest confidence.

P-6022, Engineering News-Record
Class Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CIVIL ENGINEERS

Civil Engineers with minimum of three years of experience in layout and design of dams, intakes, powerplants, spillways, canals, etc., to fill immediate openings in a design office. Some experience in writing reports desirable but not essential. Also need an engineer with minimum of 20 years experience in hydro planning and design. Please send complete resume to Personnel Manager.

HARZA ENGINEERING COMPANY
400 West Madison Street Chicago 6 Illinois

SALESMAN

STEEL JOISTS

Experienced salesman to handle improved joist type with many customer advantages. Excellent starting salary; high bonus potential for man who can take over New York-Phila. territory.

Send resume in confidence to

SW-6036, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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Current expansion program necessitates addition of one Mechanical and one Electrical Engineer. One to five years of design experience in heavy industrial or construction engineering. Excellent opportunity for individual development in one of the South's most progressive pulp and paper companies. Salary open. Liberal benefit program. Submit resume of qualifications and experience to

PERSONNEL MANAGER
HALIFAX PAPER COMPANY, INC.
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EMPLOYMENT OPPORTUNITIES

• POSITIONS VACANT

(Continued from preceding page)

Civil & Design Engineers wanted by Illinois consulting firm. Salaries from $7000, depending upon ability. Permanent positions with paid vacation, sick leave, and profit-sharing plan. Unlimited opportunities for aggressive personnel. P-6080, Engineering News-Record.

Engineer-estimator. Experienced in bid preparation and subsequent phases of administration from bid to job completion. Industrial and commercial. Engineering design necessary. Excellent opportunity. Replies confidential, send resume. P-6099, Engineering News-Record.

Sales Management position—in fabricated steel and building products lines. Will develop and control sales plans and activities for six divisions of company. Should be 30-45, engineering education, direct sales and sales management experience. Salary and profit-based bonus. Send resume to P-6087, Engineering News-Record.

Engineer Wanted—Water Supply & Distribution Graduate engineer experienced in design for well supply, water distribution systems., sewage treatment & sewage collection system. Salary open. Location Long Island, N. Y. P-6108, Engineering News-Record.

Chief Estimator—Experienced in industrial, commercial and sewage plants to approx. $2,000,000.00. Relatively small firm, excellent working conditions and opportunity to grow with firm. Operating from Central Ohio community of 90,000. Send complete resume with salary requirements. Our employees know of this advertisement. P-6089, Engineering News-Record.

Engineers—Structural Steel Sales Promotion. We are searching for Civil or Architectural engineers, preferable age 35 to 45, to handle technical and promotional work with customers of the structural steel fabricating industry. Headquarters will be in regional offices at Philadelphia, Omaha, and Los Angeles. Applicants should have a B.S. in C.E. or A.E. and preferably be registered. Experience in bridge and building design, and construction in both steel and concrete required. Experience in sales and promotion work desirable. Salary open depending on experience. Insurance and retirement plans available. Send complete resume, recent photo if available, and salary requirements by mail to American Institute of Steel Construction, Inc., 101 Park Avenue, New York 17, New York. All applicants will be acknowledged.

Sanitary Engineers—17 vacancies in New York State. Residence not required. Senior level—11 vacancies at $7818 to $9408. Requires P.E. license; engineering degree, and 2 years of pertinent experience. Assistant level—6 vacancies at $6410 to $7760. Requires bachelor's degree in sanitary or public health engineering and 1 year pertinent experience; or bachelor's degree in civil, chemical or mechanical engineering and 2 years of pertinent experience; or Master's degree in engineering with pertinent specialization. For details write Recruitment Unit, Box 76A, New York State Dept. of Civil Service, State Campus, Albany, N. Y.

• POSITIONS WANTED

Chief Estimator or Construction Manager age, 34, C.E.—49. Industrial, commercial and institutional, excellent record, desires position with opportunity. PW-5989, Engineering News-Record.

Equipment Superintendent-Service Manager Const. Eqpt. Dist. Also have been Genrl. Supt. & Asst. Supt. on earth moving & heavy industrial const. Thirty years experience. Presently on South American Project. Available April 1st. PW-6052, Engineering News-Record.

Soils and materials engineer. BSCE, MSCE. Also experience in highway and heavy construction. Desire soils and materials engineering or heavy construction. Will relocate and travel, US or foreign. PW-6059, Engineering News-Record.

Materials on Soils Engineer desires overseas employment. Twelve years experience in soils, paving, foundation exploration and design. PW-6056, Engineering News-Record.

If you are in the Heavy Construction or excavation field and have no prospects for perpetuating your business and your income, I believe we can work out a mutually agreeable arrangement. I have the background, education, experience, desire, and drive to accomplish that end. Complete resume sent upon your notification. PW-6042, Engineering News-Record.

• POSITIONS WANTED

Senior Civil Structural Engineer, Regist. P.E. in 8 States, broad experiences on structures of magnitude; steel, concrete, prestressed, posttensioned; has imagination for unusual structures; handles multimillion dollar jobs from A to Z. Available for partnership or responsible position. PW-6027, Engineering News-Record.

Civil Engineer, Registered, Age 40—Presently a Municipal Director of Public Works. Experienced in highways, airports, land development, municipal works, and surveys. Rated GS-13 by Fed. Gov't. Desire change. PW-6050, Engineering News-Record.

Civil Engineer, BSCE, 11 years foreign and domestic experience in design and construction of bridges, water front and offshore structures, buildings, Oil Co. camps and oil handling facilities. Seeks responsible foreign job. Speaks Spanish. PW-5947, Engineering News-Record.

Construction Supt—Proj Mgr, Roads, Bldgs, Flood Control, Tunnels, excellent Mech background. P.O. Box 5765, Washington 14, D.C.

General Project Manager & Contract Adminstr. 22 yrs. hvy. constr. major projects U.S. & O.S. negotiations to completion. PW-6090, Engineering News-Record.

Architect. B.S. Architectural Engineering. Registered State of Illinois. Six years experience in design of Municipal and Industrial Structures. Desires position with Architect or Architectural-Engineering firm. PW-6101, Engineering News-Record.

Project Manager, P.E., Age 37. Experience with General Contractors on Building Construction in estimating, office and field engineering, purchasing, and project management. Available after 1 March 1961. PW-6092, Engineering News-Record.

Civil engr., lic., 20 yrs exper bldg constr. with contr, field & Off. N.Y.C. PW-6118, Engineering News-Record.

• POSITIONS WANTED

American Engineer, Proj. Mgr. caliber, now in France, desires position, preferably in Europe. Experienced in Building, Grading, Paving, etc. Resume on request. PW-6049, Engineering News-Record.

Construction Supt. General Construction. PW-4482, Engineering News-Record.

Administrative Engineer, BCE, PE, 13 years experience in design (chief engineer), construction expediting and supervision, bid taking, and contract negotiations for all types and sizes of buildings. Seeking administrative position with medium-sized consultant or builder, Eastern location. PW-6102, Engineering News-Record.

Civil Engineer, graduated at the Norwegian Institute of Technology. 28. Three years of varied experience in design, construction and supervision of industrial buildings, housing projects etc. as a consultant engineer. Also good experience in surveying (partly in Canada). Working knowledge of German. Seeking job with contractor or consultant. Immediately available. Location desired: State of Washington.

Prestressed Concrete Plant Manager Competent young man with sound background in all phases of estimating, production and erection of all prestressed and precast concrete products. Desires management position with full responsibility. PW-6081, Engineering News-Record.

Structural Steel Erection Manager 20 years experience bridges and buildings. Now Erection Manager with large Midwestern fabricator. PW-6083, Engineering News-Record.

In Pursuit Of Happiness—rewarding work for the intellect sought in building technology, urbanism, creative architecture and complex structures. Inventor, Graduate C.E., European, F.ASCE, 40, offers ingenuity, talent and comprehensive knowledge. PW-6115, Engineering News-Record.

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Send to office nearest you.
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• BUSINESS OPPORTUNITIES

Consulting Engineers Ohio firm of Civil, Structural, Mechanical, Municipal, enlarging association. Submit Resume. Investment $7,000. BO-6091, Engineering News-Record.

Going Building Construction and Civil Engineering business in fast growing Tucson, Arizona. Excellent opportunity for experienced man with some capital and bonding ability. Owner will sell part or all of business to man capable of taking over responsibility. Give financial reference in first letter to establish advisability of interview and investigation. BO-6085, Engineering News-Record.

Consulting engineer, surveyor with small expanding practice desires association with small established firm or engineer surveyor wishing to establish own practice. BO-6103, Engineering News-Record.

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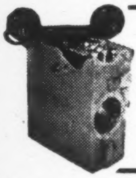
Phone: GRanite 5-2196



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Editorials

A Qualified Disappointment

It is disappointing in one way that Sen. Robert S. Kerr's Senate Select Committee on National Water Resources concluded its two-year study without mapping a bold tactical assault on U.S. water problems. For it had generally been expected that specific legislation would be proposed instead of the broad strategic plan outlined in the committee's report (ENR Jan. 26, p. 21).

But, in another way, maybe we should feel the relief of a patient whose doctor, after a thorough examination, finds no cause for an emergency operation.

There's no denying that the Kerr examination was more thorough than any other that has been made. The committee drew heavily on the extensive information sources in the federal government—the numerous departments and agencies with specialized interests related to water. It also enlisted several private consultants and the Ford Foundation's study group, Resources for the Future. Every state government was called on for information. And the committee also held a series of public hearings at various points about the United States to give regional and local opinion its day.

If any group has information in breadth and depth on how the U.S. stands with regard to water resources, it should be the Kerr committee.

This high degree of exposure to fact and opinion has produced in the committee none of the panic evinced elsewhere about our water future. Just last week, for example, the House Committee on Science and Astronautics warned that the U.S. might face a water crisis by 1970. Last October, Vice President (then Senator) Lyndon B. Johnson gravely predicted in a New York Times Sunday Magazine article that by 1975 we will be down to "rationed drinking water and little else, if we do not act." At various times in the last few years, local water shortages, engendered by community procrastination in planning and building, have been dramatized for display as proof of a national drought.

The Kerr committee, in contrast, sees no dire national water shortage. It does see regional shortages, but emphasizes that they can be met.

The real kernel in the Kerr recommendations is that we must mobilize to find out *what should* be done and *what can* be done. The need for research and planning is pointed out repeatedly in the report.

In that important respect the report jibes with other observations—the recommendations that came out of the National Conference on Water Pollution last December, for example, which emphasized the need for research and collection of basic information; and the frequent warnings of the Public Health Service that we must have more information on pollution and streamflow as a basis for assessing our water supply situation.

The main disappointment in the Kerr report is that the committee elected to pass the ball to the White House instead of trying to score. The reason is not obvious—perhaps to let the new Administration share the credit; maybe a belief that working out the details is more properly an executive than a legislative task. Whatever the reason, it is now up to the Kennedy Administration to finish the job.

Puzzling Question

The railroads appear close to reaping the rewards of their long campaign to convince government officials that the rails are poverty-stricken and therefore entitled to some form of subsidy. At any rate, government-sponsored proposals to reduce or eliminate railroad taxes levied by federal, state and local governments are on the increase.

But before government officials act to reduce needed receipts to public treasuries, they might do well to seek an answer to one rather puzzling question: If the financial plight of the rails is so dire, why do certain railroad executives and other financial interests fight so hard with so much cash to buy the vehicle they say is highballing toward the almshouse?

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And in the recent weeks, the New York Central and the Chesapeake & Ohio Railway have been competing mightily by stock purchases and stock-exchange offers to acquire the Baltimore & Ohio Railroad.

Before federal, state and local governments sacrifice funds needed for construction of highways and other public works, the reasons should be clear why the railroads can make a case for going broke and at the same time be regarded by the men who know railroads best as a valuable property. It's a puzzling question, and one to which the Interstate Commerce Commission could address itself with profit.

Not a Bad Start

Construction's first peek at what 1961 may unfold reveals some encouraging signs. Construction contract awards were the highest for any January in history and 32% above the month a year ago (see p. 71). Industrial building awards were at the highest level in two years. Proposed new projects topped $2 billion for the month, about 25% above a year ago and a whopping big addition to construction's backlog. New orders for construction equipment are on a sharper upward trend than for some time past. Mortgage interest rates are easing. All things considered, it's not a bad start.

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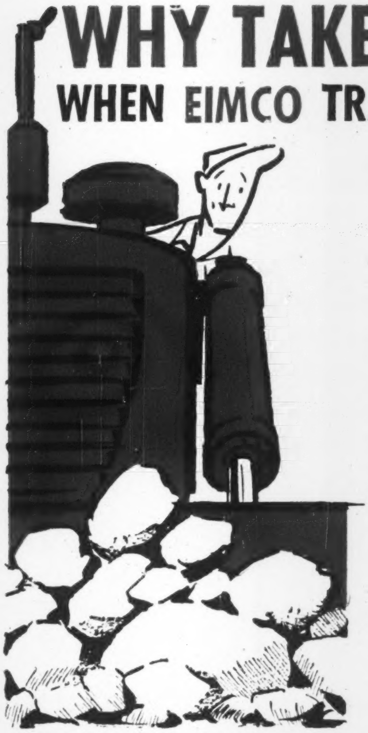

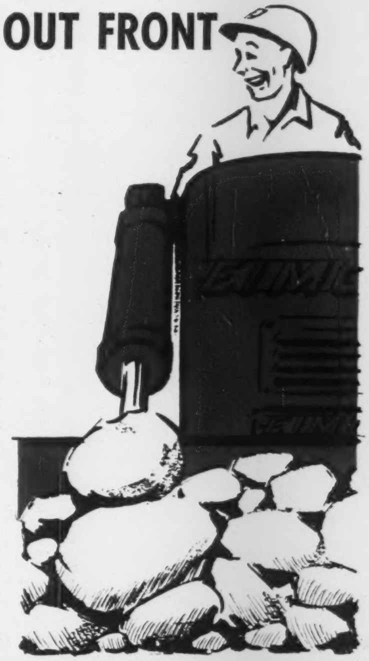

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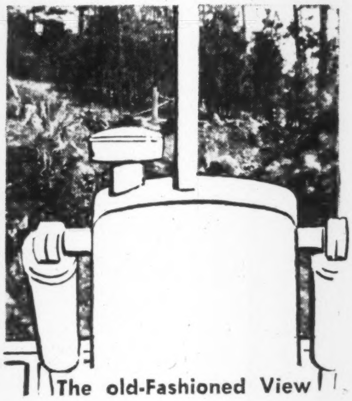

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